June 23, 1958

Paper Trade Journal

Engineering Features of North Western's Hinton Mill

Training Personnel for Greatest Effectiveness

Summing Up Groundwood — Manufacture, Properties and Uses

MOORE & WHITE
DUPLEX BOARD CUTTER
and Air-Controlled
DUPLEX SLITTER

Rugged Construction
for 'round the clock
operation . . .
On the Machine

The DUPLEX CUTTER can be adjusted while in operation for changes in lengths. A special feature also permits adjustment of draw between sections, assuring accurate cutting even when varying sheet conditions occur.

The DUPLEX SLITTER is designed particularly for use with the M. & W. Duplex Cutter but will also give excellent results with any other cutter. Changes in widths can be made in seconds while machine is in operation.

The MOORE & WHITE Company

330 East Hunting Park Avenue, Philadelphia 24, Pa. GArfield 6-9459
West Coast: Stephen Thurlow Co., 1731 First Ave. South, Seattle 4, Wash.

University Microfilms
Att: E B Power
313 N First St.
Ann Arbor, Mich.

SPECIAL . . . for chlorine service

OIC 600-LB. FORGED STEEL, O. S. & Y. VALVES

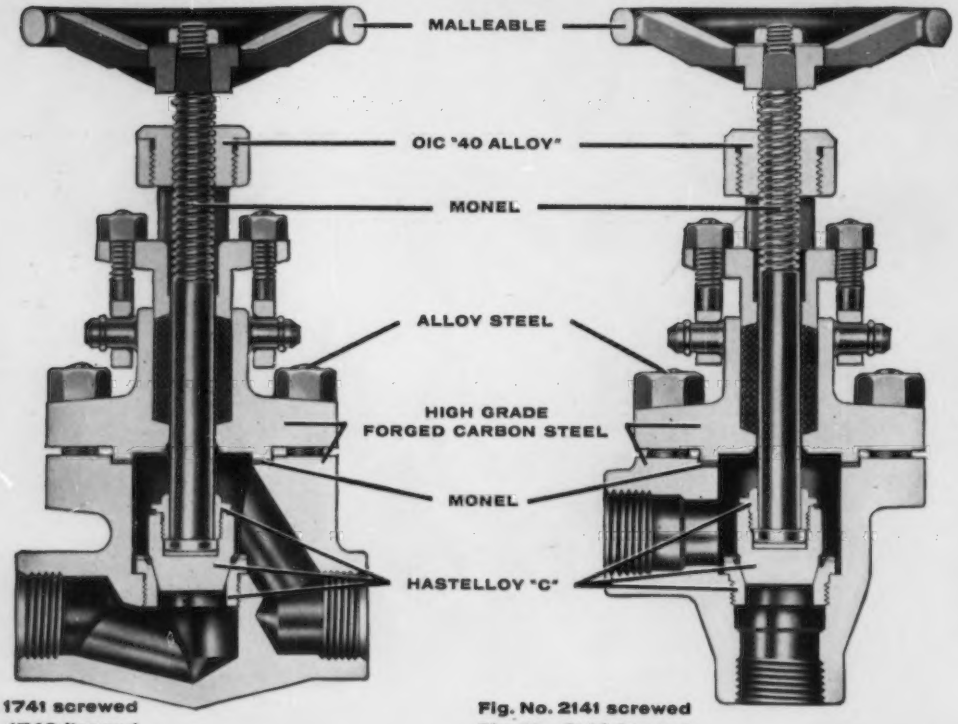

Fig. No. 1741 screwed
Fig. No. 1740 flanged

Fig. No. 2141 screwed
Fig. No. 2140 flanged

Proper design and the correct choice of metals combine in this OIC Forged Steel line to assure adequate strength, safety, and long trouble-free operation on chlorine service.

Hastelloy "C" swivel nut—disc—seat ring—Resist corrosive action of chlorine, increasing service life.

Monel stem—body-bonnet gasket—The monel stem resists corrosion. It is of generous size and accurately machined for ease of operation. The soft monel gasket is ideal for chlorine service.

OIC "40 Alloy" yoke bushing—"40 Alloy" is an aluminum-silicon-bronze which will not corrode, gall or seize. Its use adds to the ease of operation and increases the valve's service life.

High-Grade Forged Carbon Steel pressure parts—Amply proportioned wall thicknesses throughout provide strength and safety.

Alloy Steel Bolting 4 bonnet studs—Of proper size and quality to assure safety and ruggedness at the joint.

Malleable handwheel—Heavy and large, shaped for non-slip gripping.

Packing is resistant to the corrosive action of chlorine. A back seating arrangement permits repacking in a full open position.

A wide seating surface of 30° included angle permits close flow regulation. Each valve is carefully inspected at assembly, and tested at 300 psi air under water.

Write for Bulletin No. 1000, which describes these valves more fully. It also contains information on valves for black, green and white liquor services. Request also Bulletin No. 195, which describes the redesigned OIC line of Forged Steel Gate Valves.

Contact your nearby OIC Distributor for all your valve needs.

OIC
FOUNDED 1883

THE OHIO INJECTOR COMPANY • WADSWORTH, OHIO

VALVES | **FORGED & CAST STEEL, LUBRICATED PLUG, BRONZE & IRON**

METALLURGY — John A. Gaines, chief metallurgist, supervises a pressure test to measure the holding power of a Bolton Microlyzed Fillings Bar in the Wedgeless Plug dovetailed slot. Results are correlated with Brinell, tensile, compression, impact, yield, elongation, other tests in maintaining constant quality control.

SALES ENGINEERING — These experts familiarize themselves with customers' processes, see jobs through to installation. From left, Willard B. Hayden, field service engineer; Lawrence R. Mitchell, sales engineer; Henry S. Gilbert, staff sales engineer. Team functions as a technical arm of Bolton-Emerson's sales department, works closely with research and manufacturing.

RESEARCH CENTRE — George E. Soyka, technical director, in the humidity control laboratory of the new Pulp and Paper Research Centre. Primary purpose of the Centre is to conduct research and analysis as a contribution to improved methods in fibre treatment and stock preparation systems. Broad facilities enable laboratory, pilot plant and production-scale studies.

RESEARCH and DEVELOPMENT ENGINEERING — Anticipating pulp and paper industry needs is the job of Chief Engineer, Gerrit H. de Reus (standing left) and his department. Development of new Bolton and Emerson products and improvement of existing models depends upon maintaining close touch with customer requirements and plans through liaison with Customer Service and Sales Engineering Depts.

"SERVICE is a Bolton tradition"

. . . . THE PAPERMAKER

Since 1905, when John W. Bolton founded a company to produce more efficient machine knives and bars for pulp refining, service has been a Bolton tradition.

New and improved products for the paper industry have been anticipated and met through the years at Bolton by establishing development engineering, field and sales engineering, metallurgical, technical advisory and customer service departments. The most recent addition is the Pulp and Paper Research Centre.

Modern methods and facilities, skilled engineers and craftsmen with the ability to use them creatively — are reflected both in Bolton-Emerson products and the services provided for The Papermaker.

BOLTON EMERSON
TRADE MARK

John W. BOLTON & Sons, Inc.
THE EMERSON MANUFACTURING CO., DIVISION
LAWRENCE, MASSACHUSETTS

FIELD SALES-SERVICE — Regional managers, directing the field sales force, provide the direct customer link with Bolton-Emerson's complete service facilities. During a recent plant visit, Myron L. Smith, (center) Emerson plant superintendent demonstrates precision tooling technique to (l to r) F. Richard Convey, Samuel E. Crocker, Jr., and Joseph M. Steiner, managers of the Northeast, Southern and Midwest regions, respectively. Not shown is Oscar E. Larson, manager of the Western region.

THIS IS
DRYDEN
PAPER
COMPANY

Customer's one-word report on this pulp: "WONDERFUL!"

Back in the Spring of 1956, one of America's leading paper makers began to look for ways to improve their products. They realized that, to get a better product, they had to start with a better pulp.

The engineers and lab men at this plant heard reports about a new pulp coming down from Canada—the two-stage chlorine dioxide Northern bleached sulphate pulp that Dryden Paper Company would soon be producing at its new Dryden, Ontario, plant. So these paper men ordered a fifty-pound sample of Dryden, unbleached, so that they could bleach it and follow it through into paper in their own labs.

Their one-word report: "Wonderful!"

Soon after the opening of the Dryden plant in 1957, they contracted for several thousand tons of Dryden pulp for each of the next five years...but they soon came to rely on Dryden as their *only* source for quality pulp, continually upping their shipping orders. 1958 shipments are nearly three times the original tonnage.

Compare Dryden Bleached Sulphate with the best quality pulp you know. You, too, will say it deserves all the laboratory endorsements—*and all the production testimonials*—it now enjoys. Order a trial shipment today.

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DRYDEN, ONTARIO, CANADA

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REMEMBER THESE DATES

July 28-Aug. 1: TAPPI Engineering Conference, Multnomah Hotel, Portland, Ore.

Sept. 10-12: Third International Mechanical Pulping Conference sponsored jointly by Technical Section, Canadian Pulp and Paper Assn. and Technical Assn. of Pulp and Paper Industry; Chateau Frontenac, Quebec City.

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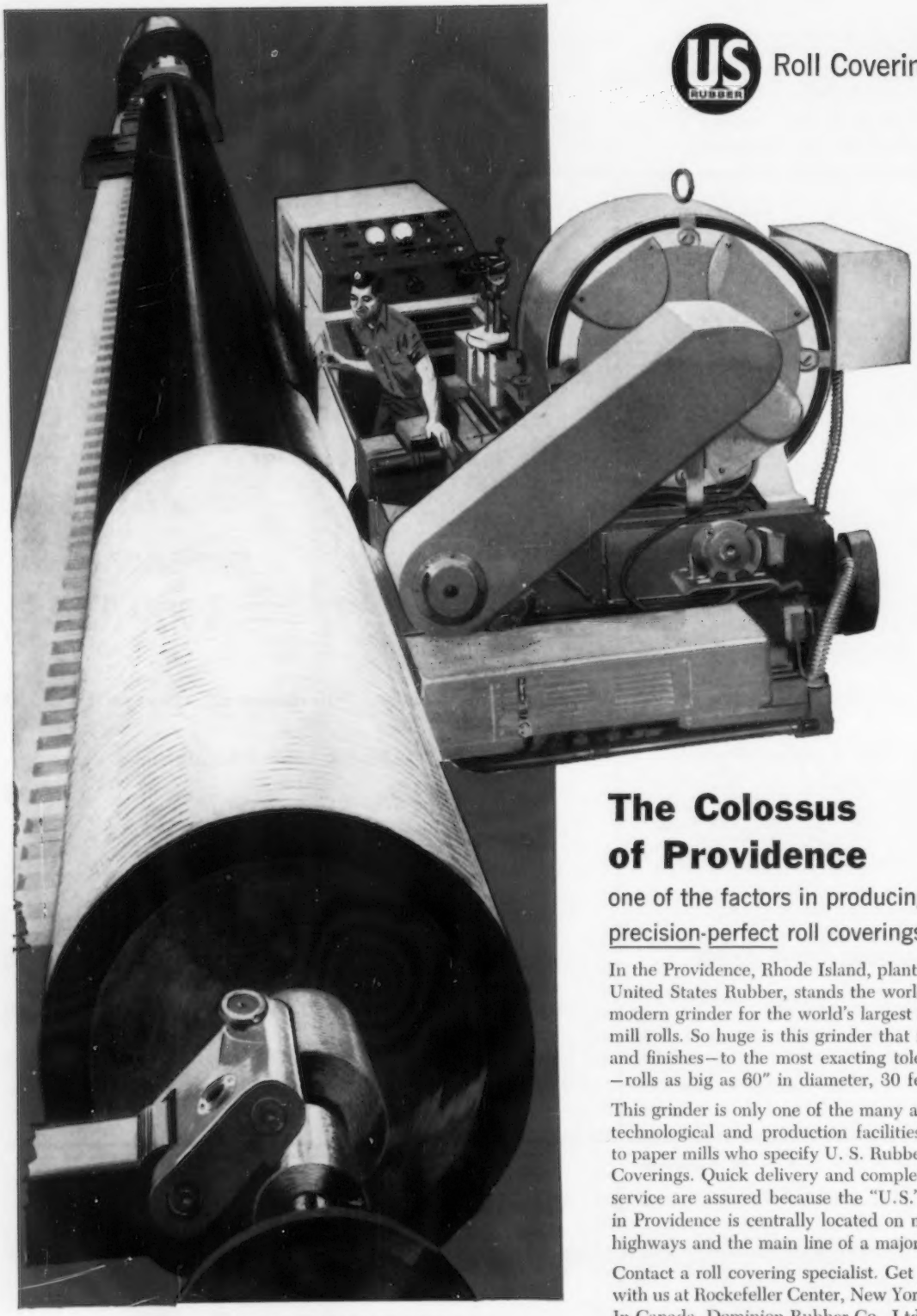


US RUBBER Roll Coverings

The Colossus of Providence

one of the factors in producing precision-perfect roll coverings.

In the Providence, Rhode Island, plant of United States Rubber, stands the world's most modern grinder for the world's largest paper mill rolls. So huge is this grinder that it crowns and finishes—to the most exacting tolerances—rolls as big as 60" in diameter, 30 feet long.

This grinder is only one of the many advanced technological and production facilities available to paper mills who specify U. S. Rubber Roll Coverings. Quick delivery and complete service are assured because the "U.S." factory in Providence is centrally located on major highways and the main line of a major railroad.

Contact a roll covering specialist. Get in touch with us at Rockefeller Center, New York 20, N. Y. In Canada, Dominion Rubber Co., Ltd.

US RUBBER Mechanical Goods Division

United States Rubber

More Signs of an Upswing

It now looks as if the Administration's economists did remarkably well in their predictions for improved business conditions for late spring. As final figures for May and weekly figures for June become available, they are piling up evidence not only of a "bottoming out" but of an actual upturn in a number of areas. Here are a few indicators: Housing starts ahead of a year ago; Public works construction and road building are up; Steel production rates are moving up; Federal Reserve Board production index was up in May (first rise in eight months); Number of workers drawing unemployment compensation is falling: Total employed is only down 2% from a year ago; and freight car loadings (an important indicator of business activity) which have given to date a clear picture of the recession, showing a definite rise for the first half of June.

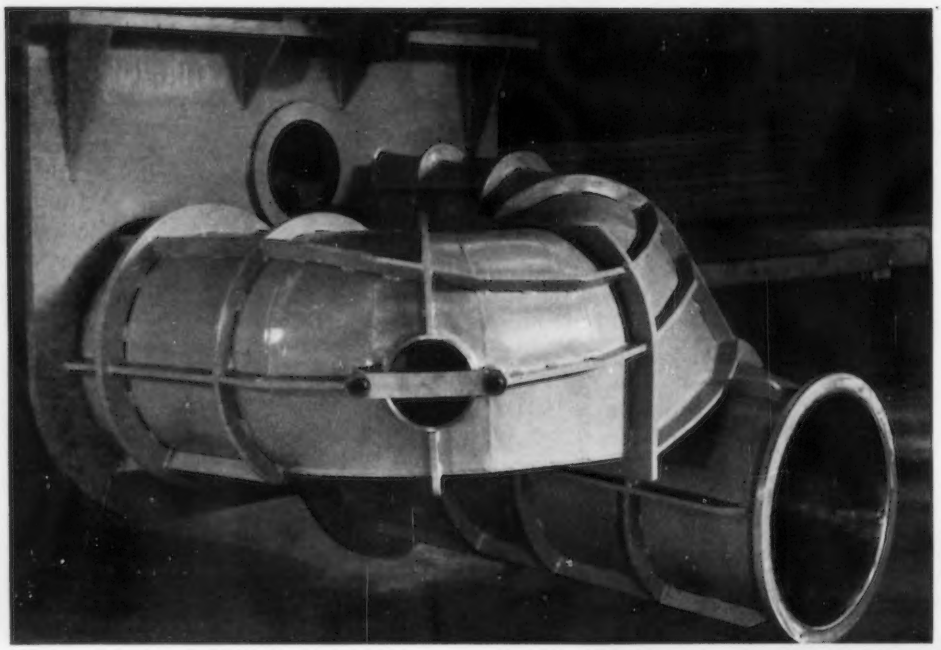
Paper and Board Consumption Off Slightly in 1957

A slight drop in the consumption of paper and board in the United States in 1957 is indicated in a report sent to Congress by the Business and Defense Services Administration, supplementing a study made a year ago. Prepared by the Forest Products Division of BDSA for the Subcommittee on Commerce and Finance, the report says that apparent domestic consumption for 1957 was 35.3 million tons compared with 36.3 million tons in 1956, an indicated drop of a million tons or 2.8%. Because inventory reductions are not reflected completely in this calculation, however, it is believed that actual consumption may have declined much less than the figures indicate. 1957 was the first time since 1952 that production and apparent consumption of these products had failed to show a gain over the previous year. The principal factor accounting for the moderate decrease according to the report "is believed to have been the general tendency of many business firms toward some reduction in inventories, since it was apparent by mid-1957 that adequate supplies of various grades were readily available from the mills." Since the report was prepared at the direction of a Congressional Committee, it reflects the politician's perennial fascination with newsprint, more than half the report being taken up with this product. A summary will be published next week.

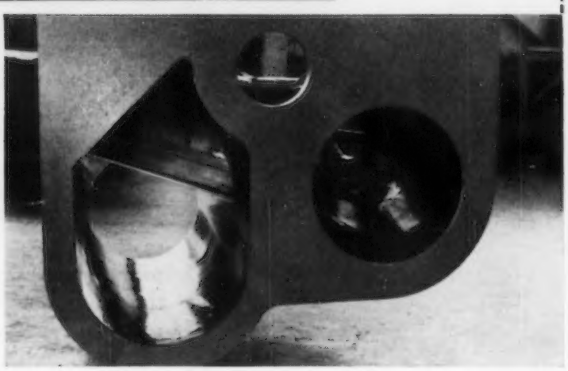
Underlying Strength in Paper Industry Seen

Our industry has been demonstrating some impressive aspects of underlying strength during the current recession, says The Value Line Investment Survey. Currently, new demand so far in 1958 has held output close to an annual rate of 30 million tons, or between 2 and 3% below last year. Total capacity is approximately 20% higher than this current rate of demand. But the Survey points out that most of the new capacity appears to be in the hands of companies willing and able to wait for basic growth in consumption to catch up. As a result little price weakness has occurred. Although volume and dollar sales totals have been relatively well maintained, substantial declines in earnings are being experienced by most companies. Operating expenses have continued to rise and recent additions to capacity have brought substantial increases in depreciation and overhead costs.

How Armco ELC Stainless Steel Can Save You Money



Armco 18-12 Mo ELC (extra low carbon) Stainless Steel proves more economical than casting made of another metal. Maze of compound curves creates no problems in forming 11 gage stainless.



Welded Armco 18-12 Mo ELC (Type 316 L) Stainless Steel in stock transfer unit replaces non-ferrous casting at a considerable saving in cost. Reason: Castings require expensive machining for smooth interior, proper fit. Stainless steel sheets don't.

Furthermore, Armco 18-12 Mo ELC Stainless Steel provides better corrosion resistance . . . assures longer service life. Selection of the ELC (extra low carbon) grade is additional insurance against harmful intergranular corrosion. This all adds up to lower maintenance costs, higher profits.

For more suggestions on how to trim costs with stainless steel, fill in and mail the coupon for our booklet, "A Stainless Profit Story for the Paper Industry."

New steels are born at Armco

ARMCO STEEL CORPORATION, 2438 Curtis St., Middletown, Ohio

Send me "A Stainless Profit Story for the Paper Industry."

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ARMCO STEEL

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Clark-Aiken Sheeters on-the-job at...

MR. FRANK FRENCH, PRESIDENT FRENCH PAPER COMPANY REPORTS;

"You have written in regard to our opinion of the Clark-Aiken Sheeter.

Several years ago we installed two of these in our mill, and I think the best comment that we can make is this:

1. We recently installed one of Clark-Aiken's latest machines and did not hesitate in any way to order this machine, and as a matter of fact did not even give any consideration to any other makes, although they are doubtless good, too.
2. We have recommended to our friends that they could not make any mistake in adopting a Clark-Aiken Sheeter for their needs."

Clark-Aiken MACHINERY ENGINEERED TO FINISHING ROOM REQUIREMENTS

. . . SAVES, SAVES, SAVES

There is a whole new concept in today's finishing rooms by alert management — complete engineering to provide practical automated operation. So many savings can be projected by utilizing the modern equipment now available that it means important reduction in costs. Clark-Aiken equipment plus Clark-Aiken engineering to individual requirements may be your answer to better control of your finishing room production. Your inquiry will get our immediate and interested attention.

THE Clark-Aiken COMPANY

956 SPRINGFIELD ROAD

LEE, MASSACHUSETTS

Four features that spell recovery unit performance

1. Panel Type Superheater and Screen
2. Tangential Overfire Air
3. Decanting Hearth
4. Precise Control

These are design features of the C-E Chemical Recovery Unit. How they contribute to efficiency, economy and flexibility is discussed below. That they blend into an integrated design is evident from the acceptance the unit has received, as indicated by the list at right. Note that the smallest unit listed has a capacity of 1,500,000 lbs. of dry solids—a size unheard of just a few years ago. Note too, that two of the ten contracts are repeat orders.

C-E Contracts for Large Recovery Units
(500 Tons and above)

Name	#Dry Solids/24 Hrs.
Enso Gutzeit OY.	1,500,000*
Union Bag & Paper Corp.	1,610,000*
Halifax Paper Co., Inc.	1,500,000*
B. C. Forest Products Ltd.	1,600,000*
Longview Fibre Co.	2,000,000*
Crossett Paper Mills	1,500,000
International Paper Co.	1,500,000
Enso Gutzeit OY.	1,500,000
Union Bag & Paper Co.	1,610,000
East Texas Pulp & Paper Co.	1,600,000

*In service

1. PANEL CONSTRUCTION

The widely spaced self-cleaning panel type superheater and screen—developed by C-E—provides no foothold for slag. Gas passage is smooth and unimpeded. Slag build up is minimized, gas flow and heat absorption is uniform across the width of the furnace, surfaces are cleaner and soot blower action is more effective.

2. TANGENTIAL AIR

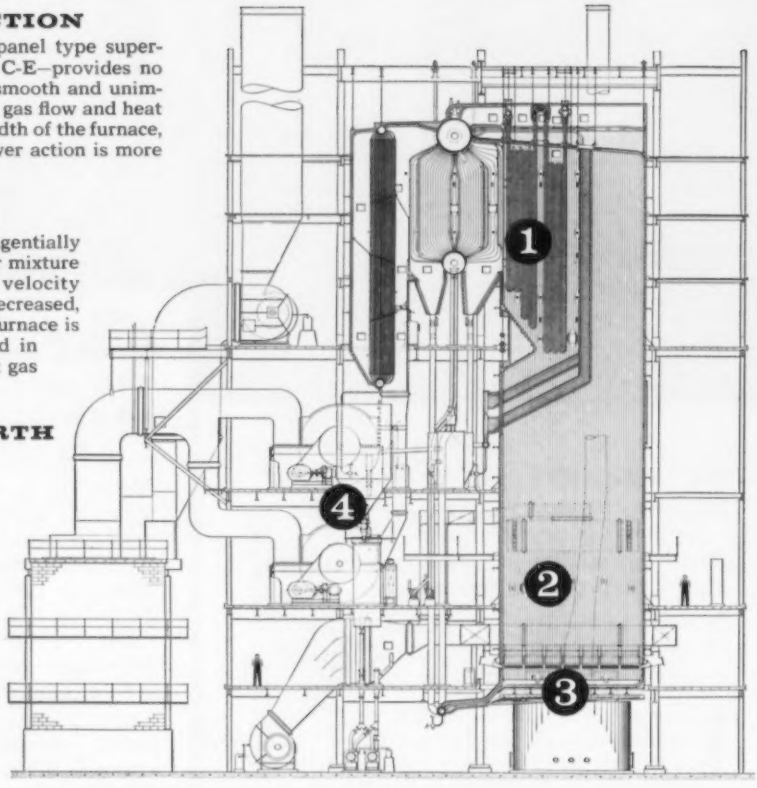
Secondary air is introduced tangentially above black liquor sprays. Fuel-air mixture is intimate and complete. Gas velocity upward through the sprays is decreased, ash entrainment in gases leaving furnace is reduced. Combustion is completed in lower part of furnace, furnace exit gas temperature is reduced.

3. DECANTING HEARTH

A layer of chilled smelt is held in contact with the water cooled furnace floor. Molten smelt rides on top of the chilled layer and leaves the furnace without touching hearth refractory or floor tubes. The cost and inconvenience of downtime due to hearth failure is eliminated.

4. CONTROL

Furnace stability is assured because evaporative heat is controllable to compensate for density differences in incoming liquor, regardless of limited multiple effect evaporator capacity. Liquor temperature is controlled accurately and automatically and fuel-air ratios are automatically proportioned to maintain the furnace atmosphere required for high reduction.



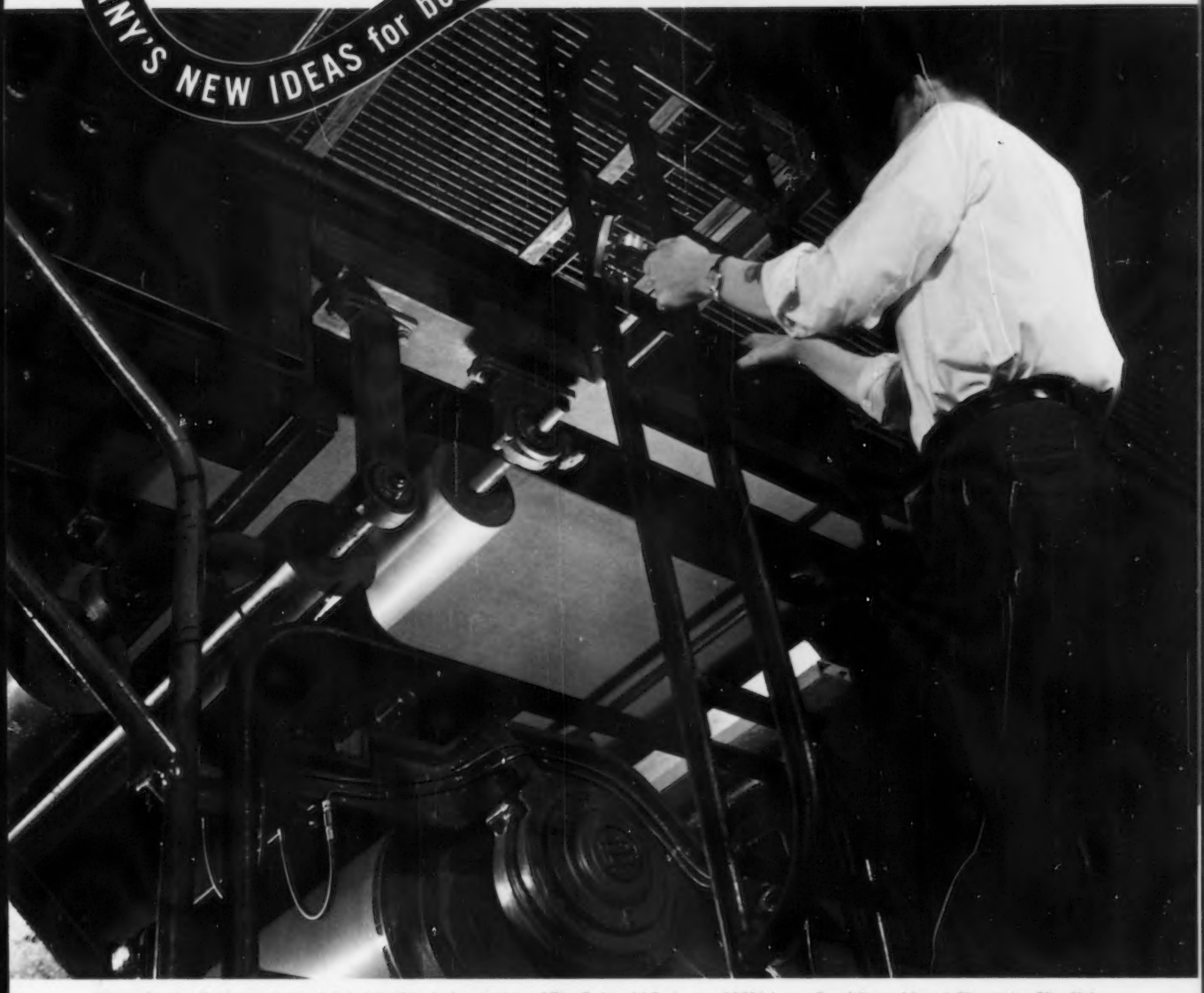
COMBUSTION ENGINEERING

Combustion Engineering Building • 200 Madison Avenue, New York 16, N. Y.

C-155

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; NUCLEAR REACTORS; PAPER MILL EQUIPMENT; PULVERIZERS; FLASH DRYING EQUIPMENT; PRESSURE VESSELS; SOIL PIPE

ALBANY'S NEW IDEAS for better papermaking



Albany Service Engineer checks felt installation during startup of The Ruberoid Co.'s new 150" trim roofing felt machine at Gloucester City, N.J.

HOW SERVICE ENGINEERING WORKS

The Albany Felt Service Engineer represents the ultimate in felt operation know-how. Unlike the Sales Engineer, who makes regular calls on your mill to take care of normal requirements, the Albany Service Engineer is the industry's top trouble shooter, always on call for emergencies. From consultation on machine design, through new machine startups and analysis of difficult felt operation problems, your Albany Service Engineer's years of specialized training and machine experience are available to help you operate more efficiently and economically.

His diagnosis of your felt requirements, translated to Albany's outstanding research-design-manufacturing team, inevitably results in better felts for your machine. Our Service Engineers are available whenever needed—their goal, as always, to help you produce more saleable tons per day!

AF

ALBANY FELT COMPANY

MAIN OFFICE & PLANT, ALBANY, N.Y.

OTHER PLANTS: HOOSICK FALLS, N.Y.; N. MONMOUTH, ME.; ST. STEPHEN, S.C.; COWANSVILLE, P.Q.

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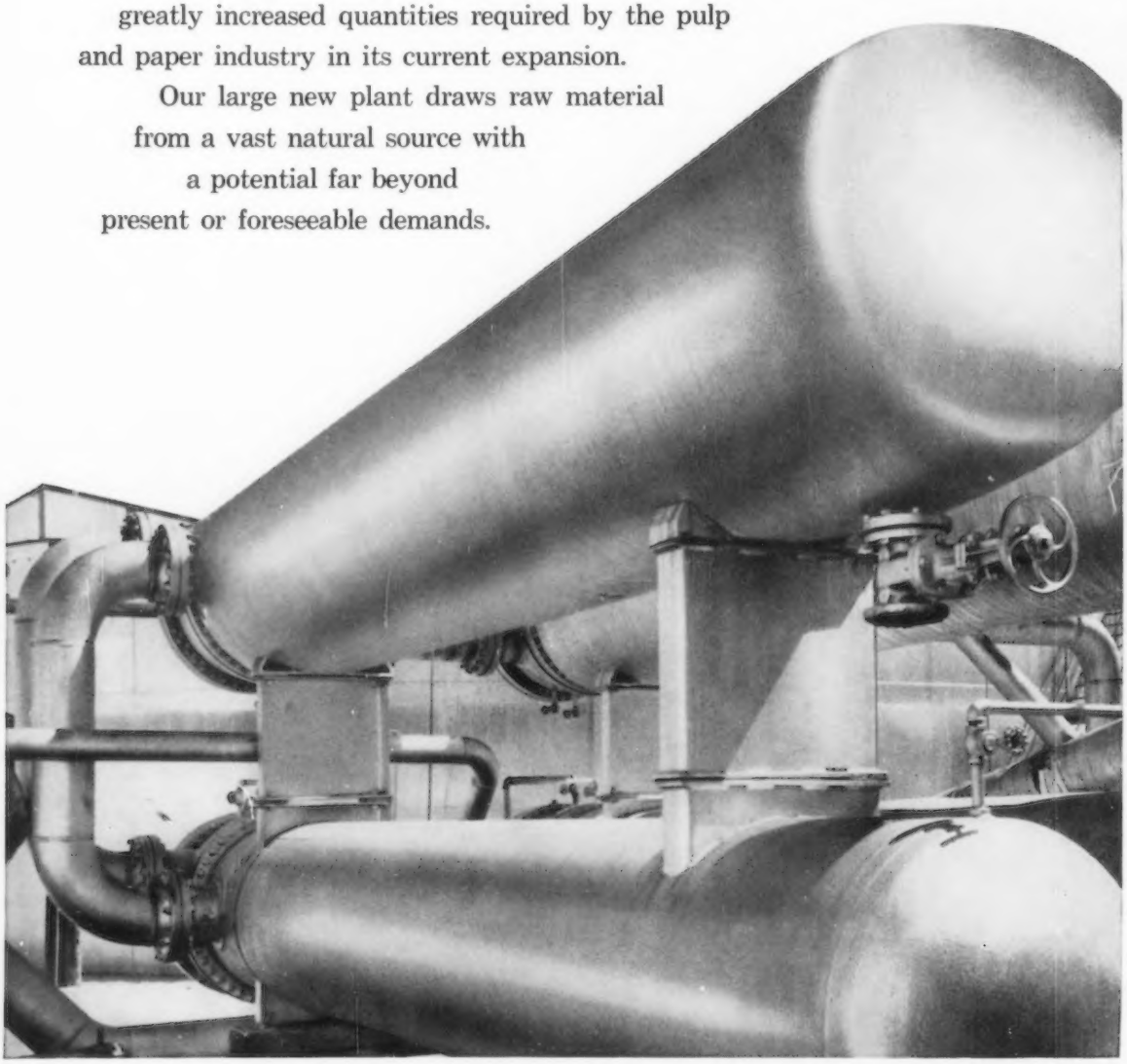
SALT CAKE is a primary West End product and we have the production capacity to meet your needs

At West End, salt cake is a prime product . . . not a by-product . . . and is being produced in the greatly increased quantities required by the pulp and paper industry in its current expansion.

Our large new plant draws raw material from a vast natural source with a potential far beyond present or foreseeable demands.



WEST END

West End Chemical Company

DIVISION OF STAUFFER CHEMICAL COMPANY

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Yes! . . . it's ALL STEEL

HP RANGE:
½ to 50 hp

RATIOS:
4:1—14:1—24:1 (or 20:1)

OUTPUT SPEED RANGE:
420 to 5 rpm

TORQUE RATINGS:
up to 31,500 lb-in

FALK ALL STEEL Shaft Mounted Drive

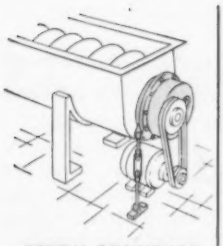
. . . Steel can "take it"!

STEEL frame . . . of fabricated plate supports all rotating elements—provides double the ability of iron to maintain vital alignment of revolving elements, even under shock load or external impact.

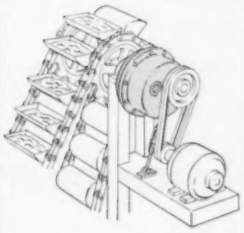
STEEL housing . . . will not fracture, serves only as protective cover and lubricant reservoir. Therefore, lubricant supply is safeguarded.

STEEL tie-rod and straddle-mounted tie rod brackets . . . are fastened to heavy steel frame by steel bolts in double shear.

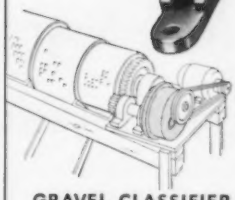
A FEW TYPICAL APPLICATIONS



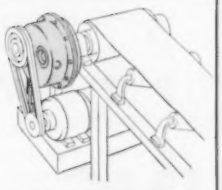
SCREW CONVEYOR



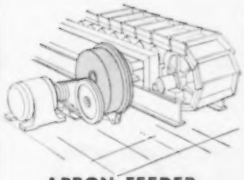
BUCKET ELEVATOR



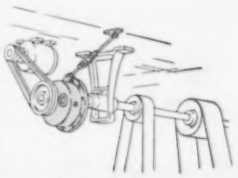
GRAVEL CLASSIFIER



BELT CONVEYOR



APRON FEEDER



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better paper
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hard board

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Nat-Con Jax Expansion Plans

John D. Northrup of Toledo, Ohio, vice president of the administration division of Owens-Illinois Glass Co., recently told the Traffic Club of Jacksonville, Fla., of the company's plans for expansion of its National Container Div. in Jacksonville.

The company, Mr. Northrup said, has already spent $250,000 in engineering fees for the Jacksonville expansion program. Major expansion of the plant will have to wait until 1961, when leases expire on 60 acres of land just north of the Jacksonville plant site, which now totals 24 acres. Oil companies which are using this land for terminal storage will have to find new quarters before that time.

Receiver Appointed for Rocky River

Harry Garland has been appointed receiver of the Rocky River Paper Mill, Inc., Three Rivers, Mich. He was appointed by the Bankruptcy Court in Detroit after a petition was filed by an attorney representing three creditors.

The receiver has been authorized to continue operation of the business and there is to be no suspension in operations, creditors of Rocky River Paper Mill have been informed.

Proposed Champion California Plant Active

Final decision on construction of a proposed $30 million pulp and paper mill by Champion in California will be made following study of research reports to be completed this month. Stanford Research Institute is preparing the report. Previously announced schedule for the plant calls for construction to begin in 1960 and full production in 1963.

Special Study of Coated Paper

Twenty-three persons have been admitted to the three-week course in "Principles and Practice of Coated Paper Manufacture," being offered from June 22 to July 12 by the department of paper technology at Western Michigan University.

Chesapeake Corp. Completes Expansion

The Chesapeake Corp. of Virginia has just put into operation its third and largest chemical recovery unit, a 500-ton boiler designed for one of the highest pressure and temperature-level combinations yet engineered in this country. Installation and operation of the unit completes a cycle of expansion and modernization of the kraft pulp and paper manufacturing plant in West Point, Va. Since World War II, Chesapeake Corp. has spent about $21,600,000 on new buildings, machinery and equipment. The program has been financed by re-invested earnings.

The large boiler was built by Combustion Engineering Inc. of New York. The unit and the new seven-floor building which houses it were erected by Tidewater Construction Co. of Norfolk. A three-compartment electrostatic precipitator recovers chemical dust from the furnace gases. The precipitator was supplied by Research-Cottrell Inc., Bound Brook, N. J., and is designed for 210,000 cubic feet per minute of gas and 95 per cent recovery of chemical solids.

Successful operation of the third chemical recovery unit recalls the fact that in 1939 Chesapeake installed the first large unit of this kind in the pulp and paper industry. This is still in use. In 1948 the corporation installed the second large unit, also still in use.

Last month the company completed the installation of a third set of screw press pulp washers which, with the new recovery unit, will increase the potential capacity of the mill from 600 to 750 tons per day. The Chesapeake Corp. pioneered in the development of the screw press process.

Boiler Engineered for High Pressures, High Temperatures

The boiler is built for 1,200-pound pressure and 900 degrees Fahrenheit operation, one of the highest pressure and temperature-level combinations yet engineered in this country. The entire furnace envelope and decanting floor is constructed of two-inch tangent tubes utilizing a double steel skin insulated casing. This design presents a completely water-cooled enclosure, and the entire bottom, front, rear and side walls—to a height of approximately six feet—are hermetically seal welded to one another to prevent any possibility of smelt leaks in the lower furnace area.

The lower furnace is equipped with four standard oil and steam atomizing guns for bringing the unit on line. The upper furnace above the black liquor sprays is equipped with four tangential oil burners each capable of producing 40,000 pounds of steam per hour. The positive control of tangential air to the furnace, utilizing the swirling and intermingling principle of fuel burning, should materially increase combustion efficiency.

Controls Are Latest Design

The unit is instrumented and equipped with the latest design of controls, and it is anticipated that complete automatic combustion control may be obtained in the near future. The boiler is likewise equipped with a full complement of 26 IK completely automatic steam soot blowers which are operated from a selectromatic panel.

The substation immediately adjacent to the operating floor of the new unit houses all high and low voltage motor starters, power step-down transformer, automatic combustion control equipment, and all electrical and vibrating controls for the electrostatic precipitator.

Accidents Fewer in Paperboard Mills

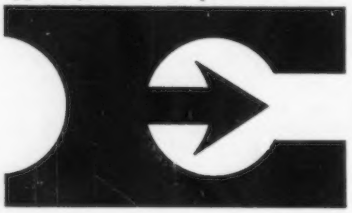
The accident frequency rate in the nation's paperboard mills declined five per cent in 1957 over 1956, National Paperboard Assn. has announced.

The Association released the 1957 Industrial Safety Yearbook which contains injury frequency and severity rates of 161 paperboard mills for the period of 1954 to 1957. Since the Association began keeping records in 1954 frequency of accidents has been reduced 18.1 per cent.

In 1958 the safety program of the Association will include safety posters for use by the mills and quarterly statistics of accident frequency rates.

Boise Cascade Installing Barker and Chipper

Boise Cascade Corp. is installing a log barker and chipper at its Council, Idaho sawmill. The log barker for small wood will be the mechanical type. The chips will be produced for the company's pulp mill now under construction at Wallula, Wash. They will be loaded into cars with a pneumatic system and shipped by rail to the plant.



Ecusta

New Trademark for Ecusta

The Ecusta Paper division of Olin Mathieson Chemical Corp. has developed a new trademark to spearhead an integrated sales program.

The trademark is key to a program aimed at finding new markets for Ecusta's paper products.

Ecusta, which has developed its reputation in the fields of cigarette paper and paper for quality books as well as in the manufacture of carbonizing tissues, expects with the start-up of a new machine this year to expand its distribution to include lightweight papers for textbooks, advertising inserts, direct mail advertising, catalogs and such items as financial and annual reports, proxy statements and prospectuses.

The new machine which Ecusta has under construction, its tenth, will add significantly to its production and will make possible greater diversification of product.

Paper and Board Production

According to the American Paper and Pulp Assn., the ratio of the United States production to mill capacity for the week ending June 7, 1958, was 84.1 per cent compared with 81.3 per cent revised for the preceding week. The ratio was 94.1 per cent for the corresponding week a year ago.

The paperboard production ratio for the week ending June 7, 1958, was 77 per cent compared with 83 per cent for the preceding week and 86 per cent for the corresponding week last year.

(Detailed statistics on page 28.)

Lowell Graduates Nine in Paper Engineering

Nine men received bachelor of science degrees in paper engineering at 60th annual commencement exercises of Lowell Technological Institute, June 15.

One, Donald L. Joyce of Pepperell, received his degree with honors. Four received Air Force Reserve commissions as second lieutenants for successful completion of the advanced ROTC program. They are Edward J. Brennan of Lowell, the distinguished military graduate; Donald L. Joyce; Paul R. Roussel and Richard J. Urbanek; both of Lowell, Mass. Five were named to *Who's Who Among Students in American Universities and Colleges*, Edward J. Brennan, James N. Copley of Lowell, Paul R. Roussel, Francis C. Sharron of Lowell and Francis J. Wieloch Jr. of Dudley.

Those accepting employment and registering through the L.T.I. placement bureau were James N. Copley, General Foods, White Plains, N. Y.; Donald L. Joyce, Albemarle Paper Co., Richmond, Va.; Paul R. Roussel and Francis J. Wieloch Jr., Riegel Paper Co., Milford, N. J.; Francis C. Sharron, Dilts Machine Co., New York and Robert J. Wellspeak, South Lee, Hurlburt Co., Mass.

Richard J. Urbanek will do graduate work at M.I.T. Edward J. Brennan and Gilbert Nowell, Methuen, as yet have not made a definite selection.

Assistant Secretary of Defense E. Perkins McGuire, a 1928 alumnus and former trustee of L.T.I. who was commencement speaker, and Philip S. Marden, author and publisher, received honorary doctor of science degrees from Dr. Martin J. Lydon, president, who awarded M.S. and B.S. degrees to 115.

WMU Graduates Take Industry Jobs

Fifteen June graduates in paper technology at Western Michigan University have accepted industrial positions, and two others plan to continue their studies at the graduate level.

William A. Foster will go to the Institute of Paper Chemistry at Appleton, Wis., and David Born will remain on the Western Michigan campus.

Going to Ohio are: John L. Grettum, Mead Corp., Chillicothe, O.; Donald Harbron, Jr., Black-Clawson Co., Hamilton; Everett L. Potts, Jr., Teodoro E. Reinhardt and Kenneth D. Smith, Champion Paper & Fibre Co., Hamilton.

Wisconsin claims three: Spencer B. Smith, Rhinelander Paper Co., Rhinelander; Joseph E. Streb and Leo J. Welling, Jr., Consolidated Water Power and Paper Co., Wisconsin Rapids.

Others are: Robert Fraik, New Jersey Zinc Co., Palmerton, Pa.; George W. Lawton, Jr., West Virginia Pulp & Paper Co., Luke, Md.; Ronald M. Nolan, Jr., International Paper Co., New York, N. Y.; Harold Krieger, American Box Board Co., Grand Rapids, Mich., and Richard Post, Kalamazoo Paper Co., Kalamazoo, Mich.

Going back to his Philippine home will be Robert Yin, who will join the Philippine Paper Co., Manila.

Scholarships Awarded to Syracuse Students

Five scholarships to students specializing in the pulp and paper technology curriculum at the State University College of Forestry at Syracuse University have recently been announced.

Robert A. Dykes of Kingston, N. Y. received a $300 scholarship from the Pennsylvania, New Jersey and Delaware (Pen-Jer-Del) Division of the American Pulp and Paper Mill Superintendents Assn.

The seventh annual Fred C. Boyce Student Award has been presented to Cyril Geacintov of Syracuse, N. Y., who was born in France and graduated from the Bundesrealschule in Linz, Austria. The Boyce award was established in 1951 in honor of the first active president of the Superintendents Assn.

John M. Roubie, a Watertown, N. Y. junior, has been awarded the third annual Mead Corp. Award of $300.

James H. Allen, a Binghamton, N. Y. junior, was presented with the $500 check as recipient of the first annual A. E. Staley Manufacturing Co. Scholarship.

The third annual Boxboard Research and Development Assn. scholarship of $250 was awarded to a Manlius, N. Y. student, James F. Caner.

Labor Contracts Signed

Southern Kraft Div. of International Paper Co. has signed a one-year contract with three unions providing about 12,000 workers in six southern states with average hourly increases of five cents.

An hourly wage increase of five cents is provided also in a two-year agreement between Canadian International Paper Co., New Brunswick Paper Co. and unions representing 6,000 employees in six mills in Eastern Canada. The new contract is retroactive to May 1. It increases the hourly rate to $1.78 and provides for four weeks vacation after 25 years' service.

NEWS OF CONVERTERS

Orchard Building New Los Angeles Plant

Orchard Paper Company, St. Louis, Mo. has purchased 3½ acres in Los Angeles' new Simons industrial tract.

Approximately 150,000 sq. ft. is available for construction of the new Orchard-Pacific Division plant on Washington Blvd. in Los Angeles. Construction begins in July, and occupancy is slated for November or early December.

The new facilities will give the firm's Los Angeles Division nearly three times the manufacturing area of the present plant.

In addition to equipment already in use at the present plant at 4717 District Blvd., the firm has purchased several new high speed bag and envelope making machines, high speed rotary printing presses, sheeters, slitters, embossers and rewinders, to increase production of the Orchard line of converted specialty paper products.

New Linerboard Eliminates Cracking

A new type of 90-pound linerboard designed to eliminate scoreline cracking in heavy duty shipping containers has been developed by West Virginia Pulp and Paper Co. and is now in commercial production.

The new board's resistance to cracking comes from the use of an unbleached kraft grade of Clupak stretchable paper as an outside lamination. The base sheet is a standard unbleached linerboard.

The linerboard is being produced at the company's Charleston, S. C., mill for use in the manufacture of both corrugated and solid fiber containers.

Box Firm in Texas Gets New Manager

Hoyt McDaris is new manager of Southern Paper Box Co. in Paris, Texas, succeeding A. W. Stayton. Mr. Stayton resigned to go with Union Bag Camp Corp., Miller and Miller Division, Atlanta, Ga.

Booklet Helps Sell Color Printing on Boxes

A new multi-colored booklet, designed to help sell color printing on corrugated shipping containers and displays, has been published by Samuel M. Langston Co., Camden, N. J.

The booklet, Think First of Corrugated, illustrates the extra impact color printing gives corrugated containers and displays.

As a sales tool, it presents 10 case histories that show how color printing on corrugated has been used successfully to boost product sales. The case histories were originally incorporated in full color advertisements that appeared in *Business Week*.

The booklet is the third edition of Think First of Corrugated, the first to be printed in full color. The earlier two editions were ordered and imprinted by corrugated container manufacturers and used to present to customers and prospects case histories of corrugated's versatility and achievements in cost savings, added protection and sales building.

Brennan Elected President of Dairypak

Dairypak, Inc., Olmstead Falls, Ohio, has elected James B. Brennan president and general manager and member of the board of the carton manufacturing firm. He succeeds Clarke Marion who has been elected chairman of the company's board of directors.

Other major organizational changes in the top management of the company include the election of Walter O. Faber, president of the firm's Butler Division, to additional duties as vice president-operations; and William R. Robison, formerly chief accountant, as controller.

Mr. Brennan joined Dairypak in 1954 as staff assistant to the president. In 1955 he was named controller and a year ago was appointed controller and assistant to the president.

Mr. Faber came to Dairypak in 1950 as director of management planning. A year later he was appointed plant manager of the Clinton, Iowa branch —a post he held until 1957, when he was named president of the firm's newest division, The Butler Paper Products Co.

Mr. Robison joined Dairypak in 1954 as a cost analyst. In 1955 he was promoted to accounting manager of budget and costs and in 1955 was appointed chief accountant.

New Stationery Bldg. in Kalamazoo

Construction has started on a $326,000 warehouse at the plant of the Kalamazoo Stationery Co., Kalamazoo, Mich.

Following completion of the new warehouse, scheduled for October 1, the company will immediately go into another program of complete interior renovation of one of the firm's several manufacturing buildings at the site.

This is to be followed by further plant expansion here, including both additional manufacturing and additional warehouse space under a general 10-year overall program launched two years ago by the Western Tablet and Stationery Co., of which Kalamazoo Stationery is a division.

Container Corp. Names Fernandina Manager

Delbert A. Theobald has been appointed general manager of the Container Corp. of America shipping container plant at Fernandina Beach, Fla. He succeeds Edwin H. Bixby, who has been named a general sales manager for the company's shipping container division.

PAPER PEOPLE

Clayton T. Bockus

Charles W. Ray

Eldridge G. Stone

Appointed to Eastern Manufacturing Post

Eastern Corp. has made the following appointments in manufacturing organization at Bangor and Lincoln, Maine:

Clayton T. Bockus—to process control superintendent covering both Brewer and Lincoln Divisions. He joined Eastern in 1929. From his early and continuing research and supervisory conduct of experimental projects in the technical service department, Mr. Bockus has been closely identified with the development and improvement of Eastern's pulping operations.

Charles W. Ray—to assistant kraft mill superintendent in the company's Lincoln Division, assisting Thomas J. Carlin in superintending operations of the industry's newest bleached sulphate plant with 175-200 ton daily capacity of Purocell pulps. In 1948 he undertook bleached pulp assignments with St. Regis Paper Co. in its Pensacola mill and later with Coosa River Newsprint Co. Mr. Ray joined Riegel Paper Corp. and was an assistant superintendent of its Acme kraft mill until transferring to Eastern this spring.

Eldridge G. Stone—to technical assistant to paper mill superintendent, Brewer Division. Mr. Stone was with Great Northern Paper Co. in Millinocket from 1953 until he joined Eastern this spring.

Etnire Named Production Chief at River Raisin

Robert C. Etnire, chief industrial engineer for the River Raisin Paper Co., has been named director of production for the firm. He will be responsible for production at Monroe, Eaton Rapids, Cleveland and Sharonville, Ohio, and Washington, Pa.

Fibreboard Announces New Appointments

J. G. Kelley has been appointed manager, Denver carton plant, Central Packaging Division of Fibreboard Paper Products Corp. He succeeds R. J. Brown, who has been transferred to a new position as supervisor, training, of Fibreboard's Stockton, Calif. carton plant.

Sydney G. Pettitt was appointed technical director of the Packaging Group of Fibreboard Paper Products Corp. The Packaging Group is a newly-created organization within the Fibreboard designed to corordinate all of the company's regional packaging manufacturing operations.

Mr. Pettitt has been production superintendent of the Portland Carton Plant for the past 19 years. He will headquarter at the company's general offices, 475 Brannan St., San Francisco.

George Olmstead Jr.

Receives Honorary Degree from U. of Maine

The University of Maine conferred an honorary Doctor of Laws degree upon George Olmstead Jr. at its 110th commencement exercises held this month.

Mr. Olmstead, president of the S. D. Warren Co., was a Phi Beta Kappa graduate of Williams College. He started as a mill operations employee of S. D. Warren Co. in 1924 rising through the ranks to become president of the corporation in 1944; he has served as president of the American Paper and Pulp Association, and is director of several New England corporations.

Merrimac Paper's Howe Retires

A. Murray Howe, resident manager of Merrimac Paper Co. Inc., Lawrence, Mass., retired this month after 44 years in the paper industry.

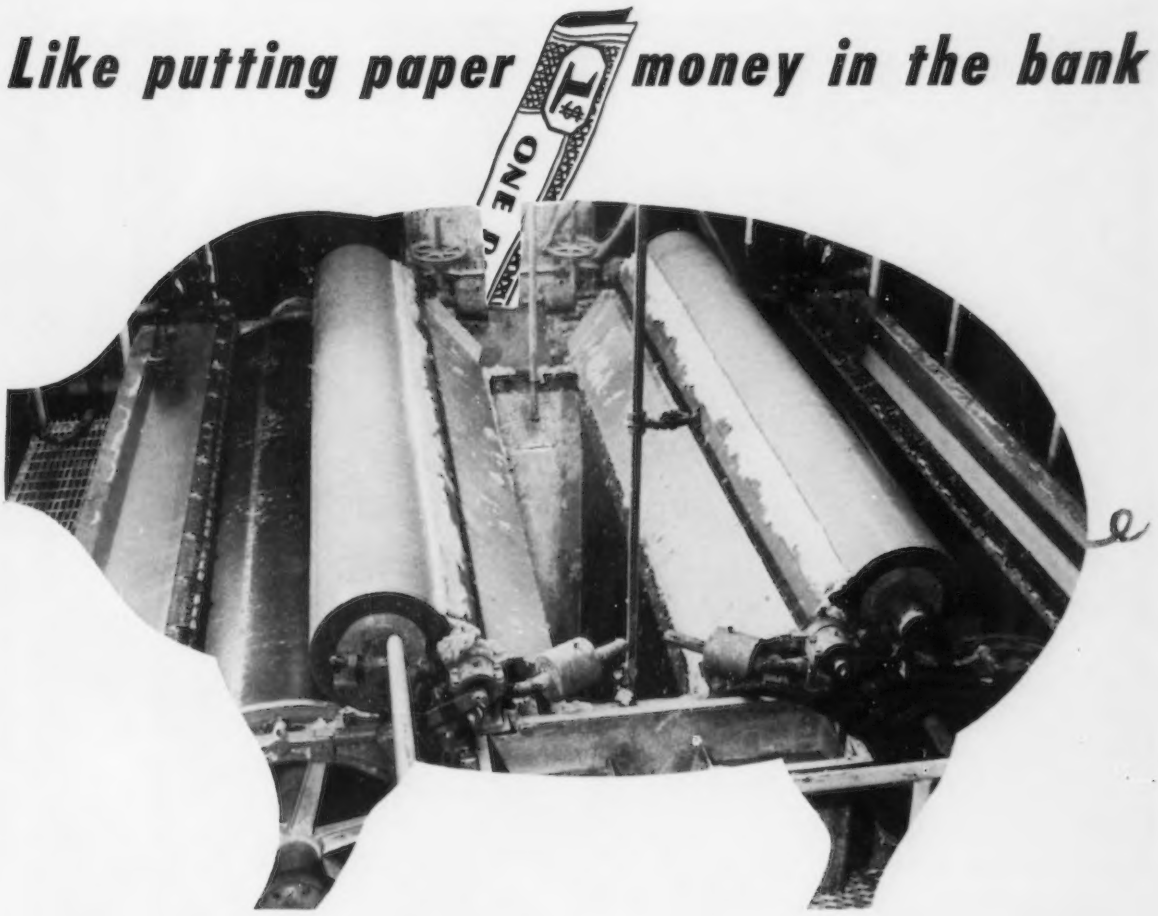
He was with Champion-International Co. for 36 years, resigning as president of that company in 1950. After a year and a half with the National Production Authority in Washington, he joined Merrimac Paper as resident manager of their mill in Lawrence.

Allied Shifts Cox to Manufacturing Dept.

Richard Cox has been appointed to the manufacturing department staff of Allied Paper Corp.

Mr. Cox, a long time Allied employee and former shipping foreman at the Monarch Mill, will have the responsibility of supplying the production scheduling department, and through them, the mill order desk, with information concerning the actual status of orders presently in the manufacturing process.

Like putting paper money in the bank



A BIRD SAVE-ALL SYSTEM

When you see good papermaking fibres coming off the couch roll of a Bird Save-All, it's like watching good paper dollars being made before your eyes.

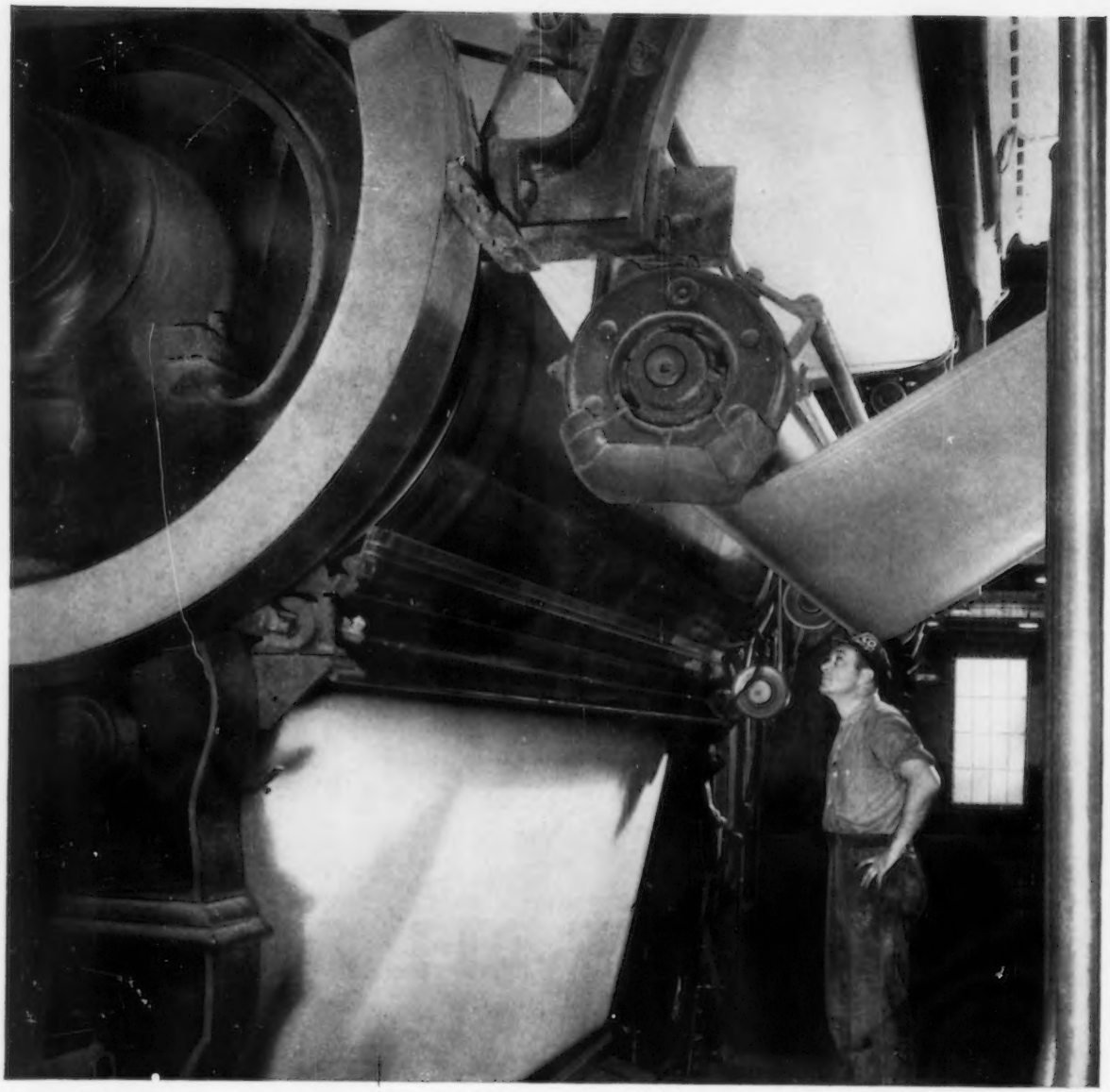
For this is stock that has been put through expensive processing . . . is finally ready to be made into salable paper . . . and but for the Save-All would be going down the drain.

A Bird Save-All system costs least to buy, install, operate and maintain. Simple gravity is the separating force. A single motor (2 HP for the 3 smaller sizes, 3 HP for the large unit) is all it takes. No vacuum, no chemicals, no storage problems.

Estimates of net savings can be readily worked out for you. Let us show you how substantial they may be.

BIRD
MACHINE COMPANY

SOUTH WALPOLE, MASS.
REGIONAL OFFICES: EVANSTON, ILLINOIS
PORTLAND, OREGON • ATLANTA 9, GEORGIA
Canadian Manufacturers of Bird Machinery
CANADIAN INGERSOLL-RAND COMPANY, Limited, Montreal



LIGHTWEIGHT CONTENDER—The Combined Locks Paper Company of Combined Locks, Wisconsin, is one of the nation's largest producers of quality paper for telephone directories and catalogs. Because paper used for these purposes must have great strength and opacity in relation to its weight, Combined Locks is faced with a considerable number of technical problems. On this 174" machine, however, Combined Locks is able to produce a 20½ lb. paper at speeds from 800 to 1000 ft. per minute, using Woodberry 887 Dryer Felts—a favorite in the Mount Vernon Dryer Felt Family.

This is another example of how fabrics made by Mount Vernon Mills, Inc. and the industries they serve, are serving America. Mount Vernon engineers and its laboratory facilities are available to help you in the development of any new fabric or in the application of those already available.

PRE-STRETCHED—All Mount Vernon dryer felts are now available pre-stretched and pre-shrunk, with or without clipper seams.

UNIFORMITY Makes The Big Difference In Industrial Fabrics

Mount Vernon Mills, inc.

A LEADER IN INDUSTRIAL TEXTILES

TURNER HALSEY COMPANY
Selling Agents

Main Office and Foreign Division: 40 Worth Street, New York, N. Y.
Branch Offices: Chicago • Atlanta • Baltimore • Boston • Los Angeles

Courtesy of Republic Steel Kitchens

GLIDDEN *Alpha*® *Protein*...

IMPROVES QUALITY, SPEEDS PRODUCTION, REDUCES COST!

Every day, more mill operators are specifying Glidden Alpha Protein, the largest selling adhesive for high-solids coated offset paper. The reason? They report that the controlled product quality, faster machine speeds and higher coat weights improve their product, reduce production costs.

Glidden Alpha Protein is a purified soy protein, carefully checked through all manufacturing stages to insure uniform quality between batches and between shipments.

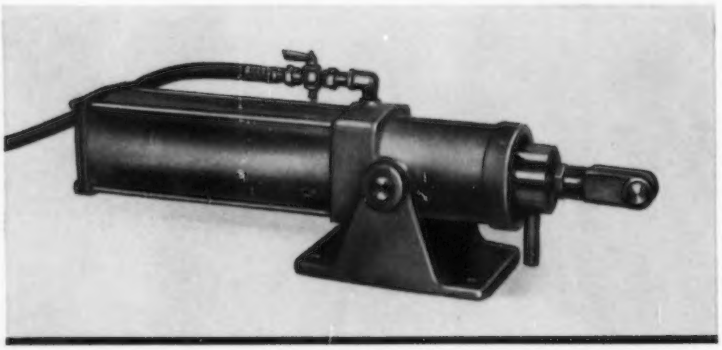
Glidden Alpha Protein dries rapidly, permits faster machine speeds with production increases up to 15%. And, the extra heavy solids coating possible with Alpha Protein means heavier coat weights and smoother, more uniform sheets.

Investigate the application of Glidden Alpha Protein in your coating operation. It can return big dividends. Write or call for complete information.

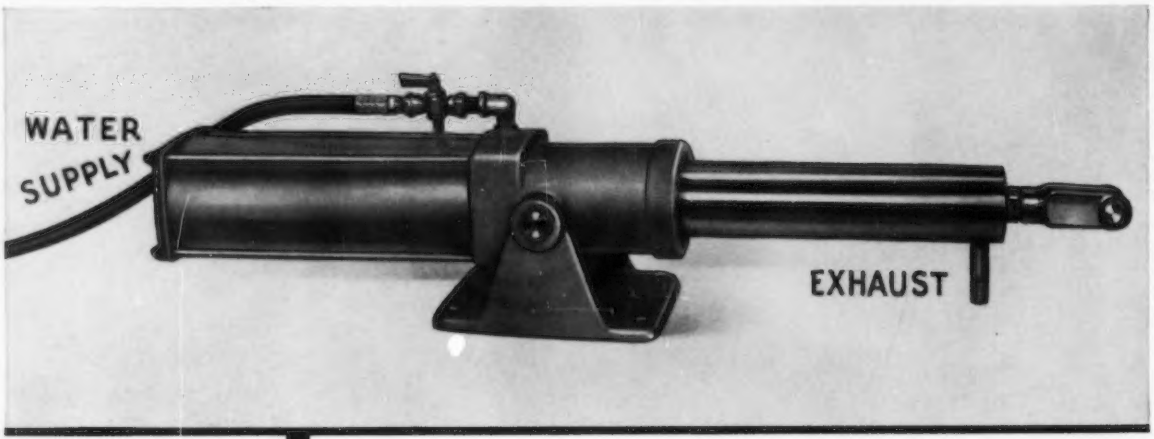
Glidden
CHEMURGY DIVISION
The Glidden Company
1825 N. Laramie Avenue • Chicago 39, Illinois

Glidden QUALITY PRODUCTS

LODDING



New Water-Operated Oscillator for Showers and Doctors

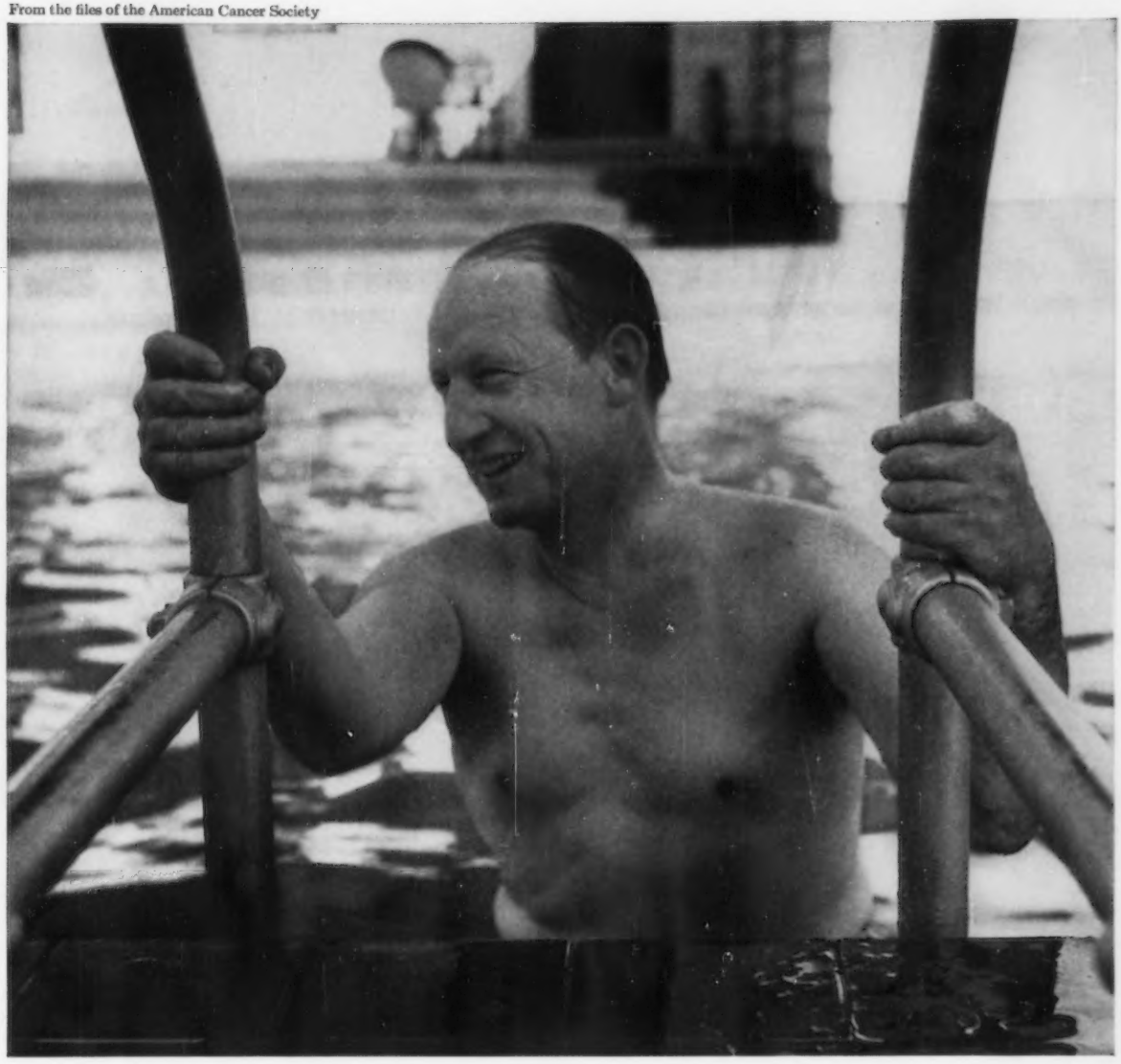


This Lodding development requires a relatively small volume of water for operation, produces a constant back and forth stroking action, or may be adapted to give a uniform rocking motion. Predetermined strokes, ranging from ¾ inch to 20 inches, are provided by the unit, while the rate can be varied easily from 1 to 25 strokes per minute while in motion.

In such applications as headbox showers, the rocking motion allows the shower to sweep the headbox by rotating through an angle of up to 90 degrees. The back and forth motion can be utilized for either doctors or showers.

LODDING ENGINEERING CORPORATION
WORCESTER, MASSACHUSETTS

From the files of the American Cancer Society



Yes! I had cancer

"Many people believe that cancer is incurable. They're wrong and I can prove it! And there are 800,000 other Americans like me.

"On a gray morning in November, 1942, a specialist confirmed the diagnosis of cancer made by my family doctor. What he had to say reassured me.

"He explained that, thanks to my habit of having yearly checkups, my doctor had caught the cancer in its early stage. It was localized and operable . . . and here I am, hale and hearty."

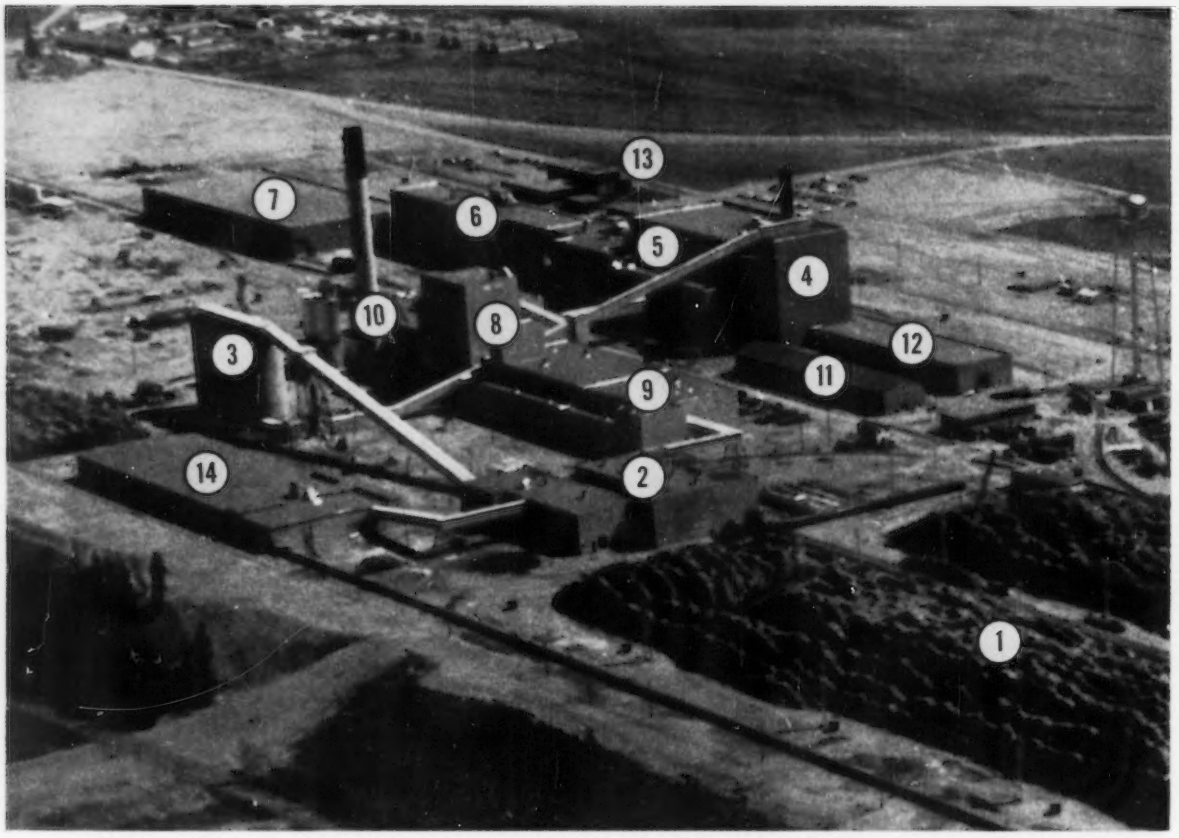
That was 15 years ago, when only 1 out of 4 persons with cancer was being cured. Today, thanks to improved methods of treatment, and earlier diagnosis, 1 person in 3 is being saved.

And with present knowledge, it can be 1 in 2, if everyone observes two simple precautions: Have a health checkup annually. Keep alert for cancer's seven danger signals.

Progress in the American Cancer Society's fight against cancer depends on the dollars donated for its broad, nation-wide program of research, education and service to the stricken.

Help save more and more lives from cancer. Fight Cancer with a Checkup and a Check. Send a check *now* to "Cancer," care of your local post office.

AMERICAN CANCER SOCIETY



DESIGN AND ARRANGEMENT OF BUILDINGS IS CLEARLY SHOWN:

1. Wood yard
2. Woodroom
3. Chip silos
4. Digesters
5. Bleach plant
6. Machine room
7. Pulp storage
8. Recovery plant
9. Recausticizing
10. Power plant
11. Warehouse
12. Shops and stores
13. Main office
14. Water treatment

Engineering Features of North Western's Hinton Mill

J. H. McCarthy
Vice President i/c Engineering-Pulp and Paper
St. Regis Paper Co.

When the editor visited the Hinton mill last fall, he was so impressed with the design and engineering that he asked the man responsible for it to write this article.

The writer has been asked to point out the unusual engineering features of the Hinton, Alberta, bleached kraft pulp mill recently put into operation by North Western Pulp and Power Ltd. This plant, designed for a production of 150,000 tons a year, is owned by North Canadian Oils Limited and St. Regis Paper Co. Each has a half interest and the latter has a management contract for operating the plant and also handles the sale of the product.

One criteria only was laid down as a guide for the process design; namely, that the product should equal or surpass the qualities found in the bleached kraft pulps commonly accepted as the world's best.

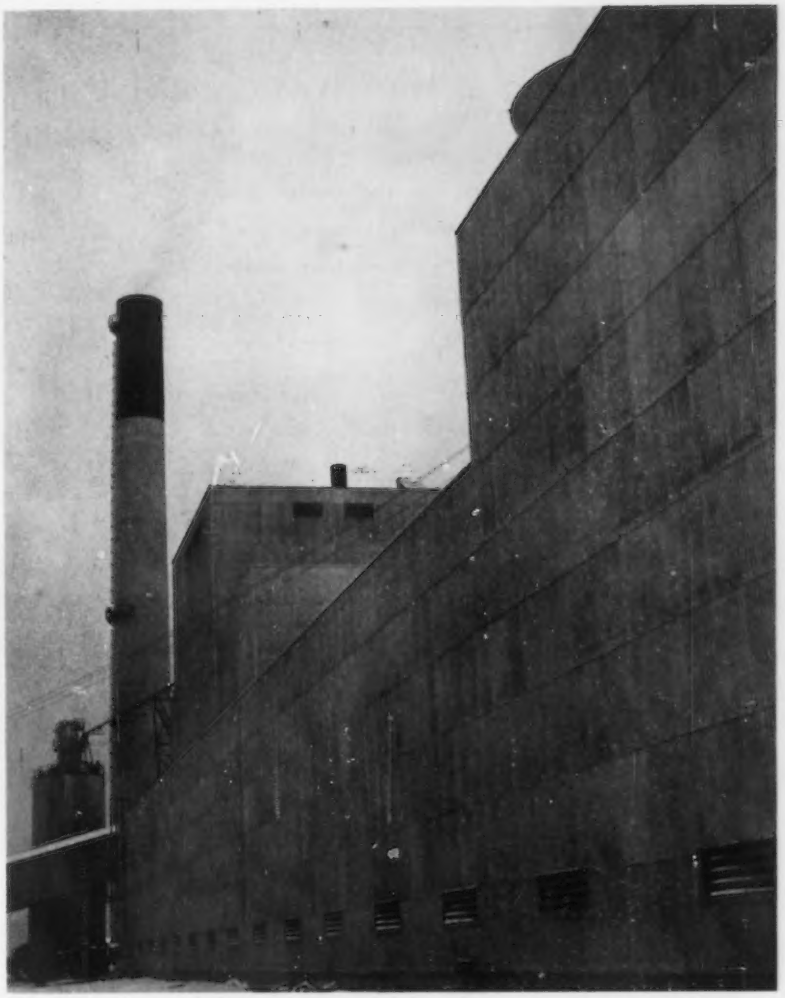
Cooking and bleaching procedures performed by St. Regis' Central Technical Laboratory indicated that the spruce and lodgepole pine furnish had the inherent qualities to accomplish the desired result. From then on, it was a case of careful mill design, choosing each step of the process thoughtfully, always with the ultimate objective in mind. All the way through the design, when a step could be added or improved to enhance quality, it was included. In fact, every known means of obtaining a superior product was worked into the design.

Utilities

Water Production and Treatment:

To ensure an adequate source of pure process water, with sufficient flow for dilution of effluent, the mill was located on the south bank of the Athabasca River, in the heart of the timberlands. Provisions have been made in the river pumping station for delivering 30,000,000 gallons of water to the mill water treatment plant by means of three pumps, each having a rated capacity of 7,000 g.p.m. A fourth pump serves as standby.

The completely automatically controlled water treatment plant was built using equipment furnished by Northwest Filter Co. of Seattle. This plant, of reinforced concrete, rectangular in shape, accomplishes coagulation, settling, and desludging, with appropriate chemical dosage, for 30 million gallons per day. Filter beds are provided for further refinement of the water going to the bleach plant and drying machine to the extent of 15 million gallons per day. Recarbonation for lowering the pH of the treated water, and final pH adjustment of the filtered water with SO_2 are provided. Chlorination control is also included. The water produced in this plant is of a quality entirely suitable for the manufacture of the highest grade of bleached kraft pulp.



Typical view of mill buildings shows recovery plant exterior. Windowless construction was used. Each department has its own heating and ventilating system. Modern high intensity lighting is used throughout.

Fuel:

In addition to the byproduct fuels such as bark and black liquor ordinarily consumed in the kraft process, some source of purchased fuel must be provided. In this case, natural gas was chosen for its cleanliness, economy, and reliability. A 10-inch gas supply main was run from Lake Wabamun 140 miles to the east. This line is capable of handling the requirements of the plant even if its capacity were to be doubled.

Transportation:

1—The plant site at Hinton is served by the main line of the Canadian National Railways. A spur line, about a mile in length, connects the mill trackage with the main line at Hinton station where an extensive system of holding tracks has been constructed by the railway.

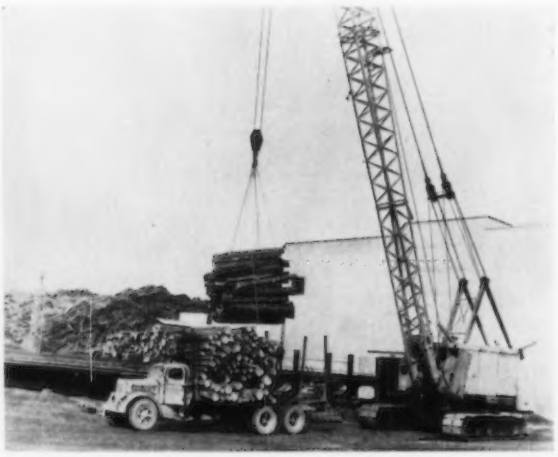
2—The plant is located less than half a mile from Dominion Highway 16, which runs from Edmonton to Jasper, a distance of about 225 miles. This highway has recently been relocated and rebuilt into a four-lane, all weather road at the west end in the vicinity of Hinton. Gradually this pattern will be followed eastward until the whole length from Edmonton west is of similar character. This highway naturally serves as primary artery for transportation of pulpwood, and for fast, economical motor-truck delivery of supplies.

Wood Storage and Preparation

The pulpwood requirements for the mill must be transported from the bush, where it is piled, to the woodyard, between November and March, when

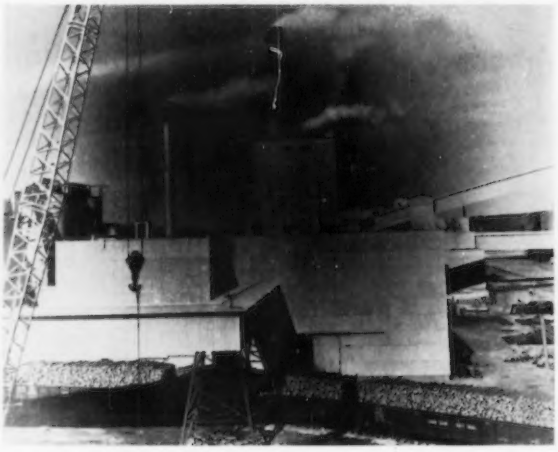
Woodhandling at Hinton

Normal northern pattern is reversed in that wood is received at the mill during the winter and reclaimed from the pile during the summer. Wood can be hauled from the bush only during the winter when the ground is frozen. In the summer, wood is delivered from the pile to the woodroom with a flume which could not be used in the severe northern Canadian winter.



Crane unloading from truck onto winter wood conveyor.

Winter wood conveyor discharging onto jackladder feeding woodroom.



Rail cars of purchased wood waiting to be unloaded by crane.

Wood is stored in the yard unbarked in ranked rows 45 feet high.

Recovery from pile is by crane into flume at lower left corner.

frozen ground makes trucking possible. Wood is cut in 100-inch lengths and is piled in orderly rows of this width to a height of 45 feet in the yard. Four main areas each holding 50,000 cords gives the woodyard a capacity of 200,000 cords or about eight months supply.

Since wood may be taken directly to the barking and chipping plant during the hauling season, it was decided to use a water flume, about 1,800 feet long, for transporting the wood from the yard during periods of relatively warm weather.

Barking is accomplished in three Fibre Making Process chain suspended drums, 12 feet diameter by 67 feet 6 inches long. Wet barking may be employed to the extent necessary due to the condition of the wood. Chipping is performed on two 12-knife Norman face 96-inch Carthage chippers, each driven by 800 h.p. synchronous motors. The selection of the Norman face disks was made as the first step towards uniformity of product.

Pulp Preparation and Drying

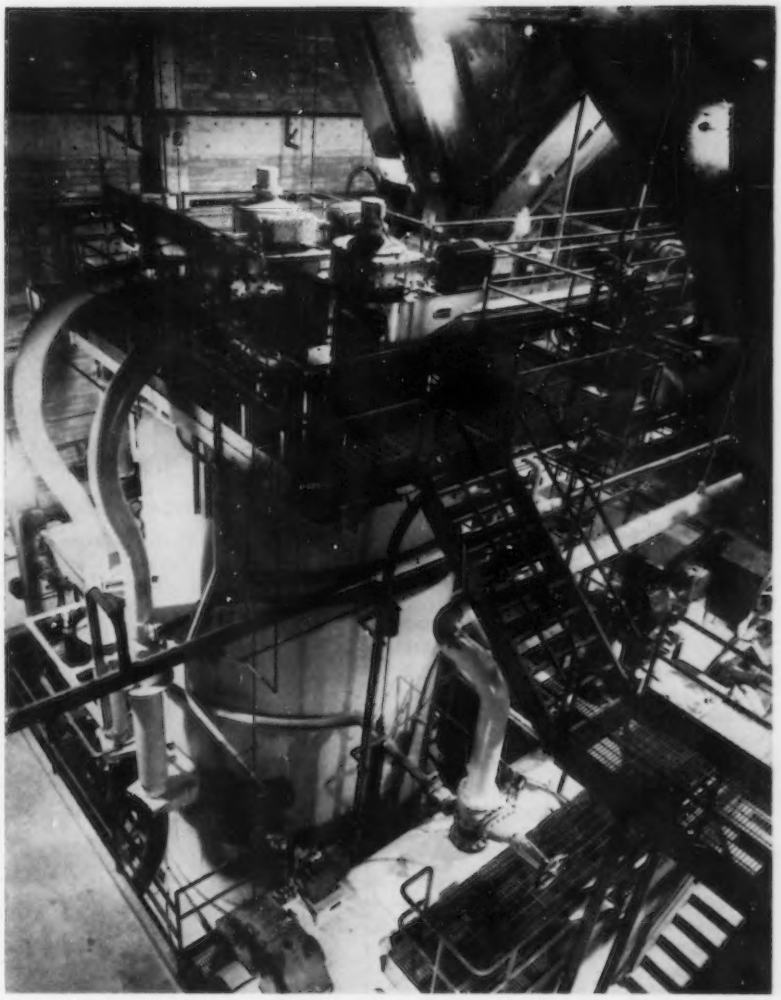
Cooking:

Wood chips are cooked in two Kamyr continuous digesters 13 feet in diameter by 95 feet high. These vessels, with their accessory equipment, represent the one basic departure from accepted North American practice in the production of market pulp. The selection of this method of cooking was made after careful and painstaking observations, extending over a period of weeks, of similar equipment in Northern Europe, by representatives of the manufacturing department and of the Central Technical Laboratory.

The ultimate objective of the plant having been set forth as the ability to produce the most uniform quality pulp with optimum physical and chemical characteristics, it was a must, therefore, that the first step in pulping should be of a nature which would enhance this quality of uniformity to the greatest degree possible. On the premise that the Kamyr system would accomplish that end, it was selected and installed and to date has lived up to every promise.

Deknotting, Washing, and Screening

Standard equipment consisting of five Jonsson knotters and an 11 foot 6 inch by 20 foot Sherbrooke three-stage brown stock washer unit, is employed here. Three high density chests of tile construction, with an aggregate capacity of 100 tons, follows the washers. Screening is done on four Mark E Cowan screens, followed by a Cowan Junior secondary. Screened stock is deckered on an 11 foot 6 inch by 20 foot Sherbrooke vacuum thickener. In the treatment of brown stock, no radical departures were made from standard practice.



One of the two vertical continuous 88-feet high digesters. Chip feeding equipment is on a platform attached to the top of the digester so that it moves up and down with the expansion and contraction of the digester.

Bleaching

Using Kamyr tower equipment, the bleach plant is arranged with the following sequence of stages.

1—Low density, upward flow chlorination.
2—High density, downward flow caustic extraction.
3—High density, downward flow hypochlorite.
4—High density, upward flow chlorine dioxide.
5—High density, downward flow caustic extraction.
6—High density, upward flow chlorine dioxide.

This arrangement is designed to produce pulp of the highest practical brightness with the least degradation of other qualities.

All pulp washing in the bleach plant is performed on 11 foot 6 inch x 20 foot Sherbrooke vacuum washers. Here again, ample size for the job to be done was the prime requisite. Following the bleach plant is a three unit, 100 ton, high density storage, similar to that on the unbleached side.

Bleached Stock Screening and Drying

The bleached stock is screened by a battery of Canadian Ingersoll-Rand Vibrotor screens, followed by an Ahlfors screen used for rejects. The pulp is then passed through a four-stage installation of Bauer cleaners, arranged so that only accepted stock from the primary stage is fed to the decker and thence to the machine chest. The se-

lection of the cleaning equipment for the bleached pulp was made on the basis that dirt in the product from any source must be eliminated before forming a sheet on the fourdrinier.

The fourdrinier section is equipped with a wire 95 feet long and 168 inches wide. Pulp drying is performed on a Minton vacuum dryer. Conventional suction and gravity presses complete the machine. The Minton dryer was selected for its high capacity and ability to maintain the high color characteristics of the sheet. This is accomplished by performing the drying function under high vacuum, and therefore, at lowered temperature.

Automatic baling, tying, weighing, transportation and tiering of the bales at the shipping dock, present many features of automation, perhaps none entirely new, but quite complete in their assembly.

Steam, Power and Liquor Recovery

In the caustic department, equipment is conventional with the addition of a white liquor polishing unit, considered one more step along the road to accomplish the production of the finest quality product. The same is true of the evaporator and black liquor recovery unit with its attendant electrostatic precipitator. Here are found standard units of a size to ensure ease of operation at high rates of production.

The two power boilers, both burning natural gas and one also equipped to burn bark, are in themselves, quite conventional, but again, of adequate capacity. Boiler feedwater make-up is demineralized with equipment by Permutit. Power for the mill and townsite is furnished by a 21,700 kw. hydrogen cooled generator, driven by a double extraction condensing turbine, operating at 600 p.s.i. and 750° F. at the throttle and 1.5 in. Hg abs. at the exhaust.

General Features

Due to frost penetration in the 40-feet thick gravel layer on which the plant was built, it was necessary to place footings, water and fire lines eight to nine feet below grade.

In general, the plant is built without conventional windows. Each department, however, has a heating and ventilating system which produces controlled conditions in this windowless mill. In a similar way, the electrical design provided for high intensity lighting uses the most modern fixtures.

Equipment is arranged departmentally to obtain a minimum of operation labor. In the pulping group, the nearness to each other, on the same level, of the digester, brown stock washing, screening, and bleaching operators, makes for easy communication and a high degree of cooperation.

Conclusion

Any project in a new frontier of pulp and paper manufacture, which Hinton certainly is, will place demands on the designers which they have perhaps not experienced before. By recognizing the new and local problems encountered and being ever alert to their solution, a cold climate mill, such as Hinton, may be built to operate as well as one in the southern states.

To accomplish this objective, a very high degree of job morale must be maintained throughout the life of the project. To achieve this morale, and to ensure workmanship of the highest quality, strong job management must be provided, together with a field engineering staff which is geared to follow detail in every phase of the work, such as structural, mechanical and electrical. Job management demands this from the various trades, but it can only be assured by constant and close follow-up by a field engineering staff, which is willing to employ tough tactics to get the best.

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

1958	May 10 87.2	May 17 87.9	May 24 85.7	May 31 81.3r	June 7 84.1
1957	May 11 95.8	May 18 96.4	May 25 94.9	June 1 90.4	June 8 94.1

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1958	86.9	89.5	89.5‡	87.4‡	86.4‡	—	—	—	—	—	—	—	—
1957	94.2	97.0	97.1	94.0	94.6	93.3	75.6	90.7	86.0	93.0	90.7	81.5	90.9

‡Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1951	1952	1953	1954	1955	1956	1957	1958
Year to Date	191.8	94.0	94.2	93.6	95.9	101.4	94.8	87.2
Year Average	98.0	88.6	92.3	91.6	94.0	97.9	90.9	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

1958	May 10 86	May 17 86	May 24 85	May 31 83	June 7 77
1957	May 11 95	May 18 95	May 25 95	June 1 88	June 8 86

COMPARATIVE MONTHLY SUMMARIES

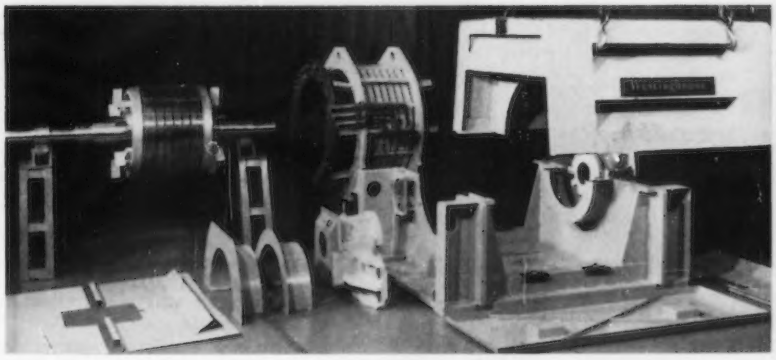
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1958	80	86	88	84	84	—	—	—	—	—	—	—	—
1957	91	94	94	92	93	91	72	94	91	97	92	79	90

† *Percents of operation based on "Inch-Hours" reported on a 6-day basis.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING June 7, 1958	LAST WEEK ENDING May 31, 1958	CUMULATIVE TO DATE Jan. 1 to June 7, 1958
% Activity	77%	83%	85%
	Tons	*Tons*	*Tons*
Total Production	248,617	247,209	5,842,749
Liner	77,830	73,492	1,897,746
Corrugating Material	37,104	35,609	862,654
Chip & Filler Board	4,400	5,343	106,444
Total Container Board	119,334	114,444	2,866,844
Folding	45,639	54,725	1,158,825
Set-Up	10,433	10,423	232,526
Special Food Board	26,044	24,241	559,352
Other	47,167	43,376	1,025,202
Total Boxboard	129,283	132,765	2,975,905
Total Orders	*Tons*	*Tons*	
Received	304,529	264,648	
Unfilled End of Week	404,015	348,600	

NEW EQUIPMENT AND SUPPLIES

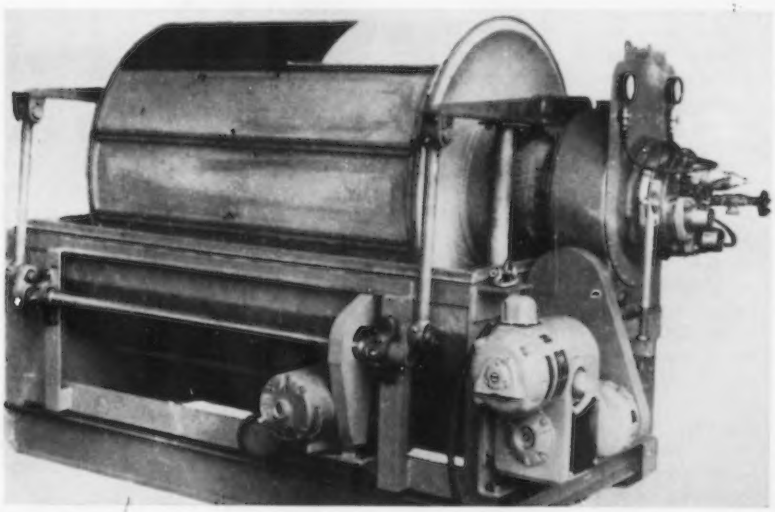


New AC Motors Are Fully Accessible

Complete accessibility of all components is the major feature of Westinghouse's new line of large a.c. motors. It is permitted by the motor enclosures being manufactured independent of the wound stator.

The complete line of Westinghouse squirrel-cage, wound rotor, and synchronous motors from 250 to 7000 h.p. (for all horizontal utility and industrial drive applications) have been redesigned to use only six basic enclosures and 30 frame sizes as compared to 450 frame sizes formerly used.

For inspection purposes, it is reported that the enclosures are quickly removed, easily replaced, and require no realignment. Noise mufflers, air filters and all types of accessories can be added to the motors without any redesign of basic parts.



Plastic Rotary Filter for Corrosive Applications

Dorr-Oliver Inc., Havemyer Lane, Stamford, Conn., has introduced a rotary drum vacuum filter constructed of fiberglass. First plastic filter to be offered commercially, this unit has been developed specifically for mildly corrosive applications which normally require special materials of construction. Cost of a plastic filter is less than that of rubber covered or stainless steel machines of comparable size and design.

Components of the filter are fabricated of molded plastic with certain supporting structural members constructed of resin coated mild steel. A fiberglass drum with molded plastic trunnion and drum heads turns on a steel shaft and fabricated steel drive bearing. The drum surface is divided into longitudinal sections each of which is drained through molded rubber grids. "Waffle-like" in appearance, these grids can be snapped in and out of place for inspection and replacement. The filter tank is also of molded plastic construction and is provided with polyvinyl chloride feed connections. This new plastic filter according to the manufacturer, is particularly applicable to operations in which scaling is a major consideration.

Compact, Low Cost Indicating Controller

Primarily for temperature or pressure control, a new indicating controller, called the USG "Pilot", is now in volume production at the U. S. Gauge Division of American Machine and Metals, Inc., Sellersville, Pa.

The unit is specifically designed to meet industry's needs for a compact, low-cost pneumatic controller. Yet it can provide not only two-position control but also wide band proportional with or without automatic reset or rate action. Measuring 8½ inches square by 4 inches deep, the controller can be surface-mounted on equipment, or flush-mounted on instrument panelboards. It can also be mounted directly on the pneumatic-operated valve that it positions.

Modes of pneumatic control offered are: two-position with differential gap, adjustable from 1 to 100 percent; proportional control, adjustable 1 to 100 percent, and proportional control 1 to 150 percent plus automatic reset or rate action. Controller design permits easy change from one mode to another after unit is installed.

For temperature measurements, a variety of thermometer bulbs of different fills is offered for temperatures from —350°F to +1000°F. For pressure measurements, the basic element for ranges from 0 to 10,000 p.s.i. is a pre-calibrated Bourdon tube and movement with integral dial and pointers. Basically, the unit can be used to measure and control any variable which can be translated into rotary or linear motion.

Tissue Defoamer

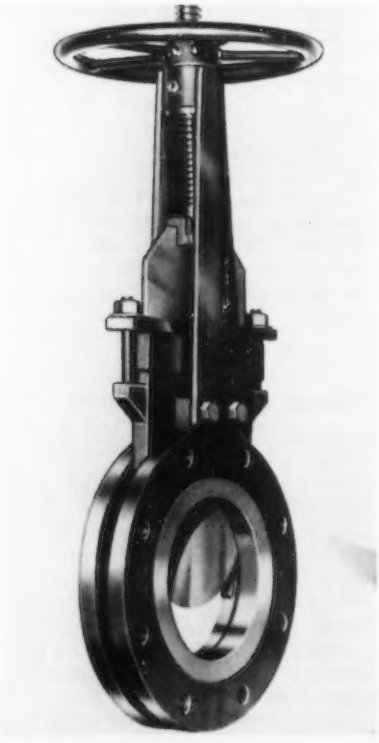
Nopco Chemical Co. has just released information on a liquid defoamer designed primarily for tissue furnishes and color coatings. Called Nopco 1325-P, the product is used during tissue manufacture to inhibit foam formation at the paper machine, and, in color mixes, to break surface foam and prevent air entrainment.

Free copies of the data sheet on Nopco 1325-P are available upon request from the Paper Chemicals Div., Nopco Chemical Co., Harrison, N. J.

The DRAPER Felt
DRAPER BROTHERS COMPANY
CANTON, MASS.

Odor-Meter Aids in Subjective Analysis of Smells

The recent development of an odor-measuring instrument reportedly makes it possible to analyze industrial and commercial odor problems quantitatively and to design odor-control measures on an engineering basis.



The odor-meter was devised by Hemeon Associates (air pollution research engineers) 121 Meyran Ave., Pittsburgh, Pa., to facilitate their studies of odor pollution problems for industrial clients.

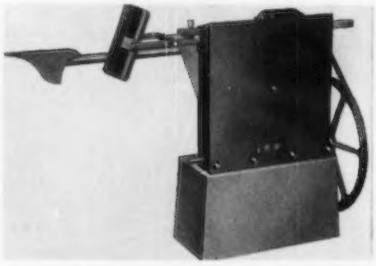
The device mixes odor-laden air from a process with purified air, and supplies the resulting air stream continuously to helmets worn by human subjects. Their votes on the intensity of odors in a systematic series of mixtures, in combination with data provided by the odor-meter itself, are translated into number quantities that describe concentration and quantity of odor emanating from a particular source.

The company does not intend to market the instrument, but will use it in solving odor problems.

Wafer Stock Valve Has No Packing Gland

Fabri-Valve Co. of America is manufacturing an inverted stuffing box for their bonnetless stock valve line under U. S. Pat. No. 2,832,564. The stuffing box is of one piece construction and requires no packing gland; the chest ends help to compress the packing to the desired pressure. This innovation in stuffing box design is self-aligning, assuring proper alignment between the gate and the valve seat, providing a seal with minimum gland bolt pressure.

The firm is now offering many types of pulp stock valves which feature the new inverted stuffing box as standard equipment. Among these is the space saving wafer design illustrated here. Wafer bonnetless stock valves can be manufactured to minimum overall dimensions allowing them to fit into any installation. These, along with standard face to face bonnetless stock valves, are available in standard sizes from 2 to 24 inches. Metering valves are also equipped with the new inverted stuffing box and can be furnished in either the wafer or standard face to face dimension in the same sizes.



Chip Sampling Device

A new sampling device, made especially for sampling wood chips but easily adaptable to many down-flowing solids or liquids, has been announced by Carthage Machine Co., Carthage, N. Y.

The sampling palm is quickly thrust into and removed from the stream, resulting in a representative sample at that moment. The device can be set to take samples at any interval from one a minute to one an hour. After a specified period of time, usually 24 hours, these samples are then combined into an accurate composite sample.

The palm is held in a horizontal position by a yoke during sampling and, when withdrawn, revolves to dump the sample into a convenient hopper. Dimensions of the unit are 24 by 24 by 6 inches.

Breath-taking fidelity with four colors on LATEX COATED paper

Paper manufacturers and converters use Dow Latex for paper coatings to improve dimensional stability and ink hold-out and reduce water sensitivity. It makes possible sharper printing and fracture-free folding, assuring customers of highest quality coated stock at very reasonable cost.

DOW

Authentic 19th Century folk art courtesy The Henry Ford Museum

No. 4 of a series. LATEX COATED

The "Pennsylvania Dutch" period was a colorful era in American history as the illustration on the preceding page would indicate. Notice how accurately the colorful details reproduce on latex coated stock. In this instance, 80 lb. machine coated gloss letterpress paper was used. Careful examination will show why only latex offers such an excellent printing surface.

For fine quality reproduction, specify latex coated papers

When you record your written or pictorial message on latex coated paper you have eliminated a variable which often means the difference between a good or a mediocre printing job.

The printer's first consideration is the surface of a sheet, is it properly coated to receive the inks he means to apply? Does it have the qualities which will assure sharp, clear reproduction every time? The answer is yes if the sheet is latex coated.

Paper coated with latex makes it possible to obtain sharp, clear, true-to-life images no matter what printing process you prefer.

Major paper manufacturers are now using latex in their coatings for paper. It is used for machine and off-machine coating for both dull and glossy stocks. For more detailed information on latex coated paper, write THE DOW CHEMICAL COMPANY, Midland, Michigan, Coatings Sales Dept. 2157B.

YOU CAN DEPEND ON DOW

Training Personnel for Effectiveness

On these pages you will find summaries of five papers presented at the first annual meeting of the Pulp and Paper Section of the American Society of Training Directors

Communications training was the subject of the opening talk at the meeting of the Pulp and Paper Section, American Society of Training Directors held recently in Washington, D.C. H. W. Temple, Abitibi Power & Paper Co., Toronto, Ont., is the new chairman replacing W. H. Stubbs, American Box Board Co., Filer City, Mich.

Communications Training

W. Binns outlined the program used by Union Bag-Camp Paper Co. in communications training. He pointed out how communication can become distorted and explained some of its causes.

The chief points he made were:

1—Effective communicators transmit information, views, opinions, and attitudes through a common code. If the communicators agree on the code, transmission is a simple part of the process. However, the communicators themselves have physical and psychological reactions to what is being communicated, and these reactions often cause communication to fail.

2—These reactions are brought about by the world in which each communicator lives. Each has his own psychological world which creates a pitfall to communication. Since communicators' interpretations of the spoken and written word are affected by these worlds, each may give a different interpretation to the same communication.

3—The language used as a code also presents a pitfall because words do not always accurately represent the things to which they refer.

4—Communicators never get all the facts out of any situation. Their descriptions of the situation and their statements of a problem are always incomplete because they cannot abstract all the features.

5—There is no easy solution for improving communication. However, if the communicators know the process and are aware of the pitfalls, they can do a lot to make it more effective. When they are on the sending end they can help by keeping the facts in and the embellishments out. When they are on the receiving end, they can help by being good listeners.

Attending the meeting of pulp and paper training directors were:

Row one: W. F. Kemp, S. D. Warren Co.; W. H. Stubbs, American Box Board; L. J. Walz, Scott; Dr. A. H. Nadelman, Western Michigan University; H. W. Temple, Abitibi; William Binns, Union Bag-Camp.

Row two: A. C. Miller, Glatfelter; R. B. Welch, Glatfelter; G. H. Hoffmaster, Schmidt & Ault; Olaf Larsen, Westfield; A. Glenn Waters, St. Regis; E. G. Hall, Oxford Paper.

Row three: D. Gallacher, Champion; R. V. Metz, J. C. Fluke, W. E. McMinn, C. E. Barr, D. D. Page, all West Virginia Pulp and Paper.

Row four: D. C. Hunter, Olin Mathieson; J. S. C. Belt, Kieckhefer-Eddy; G. C. Peterson, Bemis Bag; E. L. Babb, Olin Mathieson; W. Brumbaugh, Kieckhefer-Eddy; Ken Gallinger, Kodak.

Row five: F. R. Boswell, CZ Gaylord; D. R. Staley, West Virginia; William Johnson, Continental Can; A. J. D. Cook, W. R. Grace & Co.; E. B. Wenzel, North West.

Row six: C. H. Thompson, Daring Paper; E. French, U.S. Dept. of Labor; S. S. Kaler, State of Maine Apprenticeship & Training Bureau; J. O. Walker, N. Y. & Penn.; H. E. Mathieu, Bird & Son.

Bridging the Gap from Campus to Industry

Linc Walz
Scott Paper Co.

For a number of years, we at Scott have conducted various orientation, induction and familiarization programs for the recent engineering graduate. Most of these were one-shot programs, varying from a few days to a month or more in duration and, quite frankly, left much to be desired. Therefore, with the help of our engineering and research groups, we developed a more formalized program. After three years of experimentation and growing pains, we feel now that this program successfully transforms the engineering trainee into a productive project engineer, well equipped to competently handle projects which formerly would not be offered him for 18 months to two years after his initial employment date.

Our program, which is admittedly concentrated, runs 40 hours per week for just eight weeks. Prior to its inception, we researched a number of other programs, but seemed to be a seeing, or watching type of orientation. Our feelings were that our trainees would prefer a *doing* type of program, and thus we directed our activities toward that end.

Basically the program can be broken down into six major areas of development:

1—Orientation and Induction
2—Pulp and Paper Course
3—Field Problems
4—Field Tours
5—Departmental Familiarization
6—Group Discussions

When the graduate reports for his induction and job assignment, he normally spends a week or two in his permanent job location. Here he is allowed to get his feet on the ground in an industrial setting. During this period he becomes familiar with the people with whom he will later be associated, and learns the various functions and structure of his department. During this period, also, representatives of the personnel group in his specific plant location review with him company policy and benefits relative to the new employee.

At the conclusion of this initial orientation, the trainees are all brought into our corporate headquarters at Chester, Pa. for the next phase of their development.

They are welcomed by the vice president in charge of engineering and research, the manager of corporate training and development, and the manufacturing training supervisor who acts as co-ordinator of the program, secures the lecturers, and directs the activities of the trainees during their training period.

Pulp & Paper Course

One of the most important parts of the program, we feel, is the Pulp and Paper Course. The lecturers for this course are chosen from experienced staff engineering, mechanical and chemical research personnel, and are competent instructors.

The trainees are required through evening reading assignments to come prepared to participate intelligently in a question and answer session at the conclusion of each lecture.

References for this phase of the program—23 lectures running the gamut from the history of paper making, through pulpwood manufacture, paper making and converting—are:

"University of Maine Lectures"—Vol. II.

"Pulp and Paper Making Notes"—A Scott publication.

"General Information and Application Data on the Pulp & Paper Industry," published by General Electric.

Most of the reading assignments and lectures are based on the Scott text, which is a compilation of notes, distributed in mimeographed form for a number of years to those employees participating in our after-hour Pulp and Paper Course.

Interspersed throughout the Pulp and Paper Course are a number of problems presented to the trainees. At one point with our group of last year, several converting problems were offered that at that time were unresolved. While I can't say they completely resolved all of these current problems, many of their suggestions were ultimately utilized.

Field Problems

The field problem assignments may be broken down into three parts:

1—Pulp Prep Problem—Each trainee is required to trace out the stock and water system from the breakers, through the refiners, and into the paper machine including the broke system. From his sketches, he is required to prepare a drawing for presentation at the conclusion of this assignment.

2—Paper Mill Problem—Here each trainee is given one specific machine, and must present a drawing of a side elevation of the machine, including all fourdrinier rolls, press rolls, Yankee dryer, after dryers, calender and real. In addition, he must trace out and draw up the vacuum and steam systems for his specific machine. A written report is required on each of these assignments, explaining their operational function.

3—Converting Problem—For one week, the trainees are given the assignment of tracing out the paper run on each of the different types of converting machines. They are also required to study and report the functions of all of the different wrappers, case sealers and packers. During their mill field problems, each man is personally instructed not to touch any machinery, talk with the operators, or interfere in any way with production operations. Any questions are to be referred to the coordinator or converting supervision.

Field Tours

A number of field tours are presented to the group; 1—The testing laboratory, where all of the quality control checks are explained. 2—The process control laboratory, where running tests of pulp preparation and paper machine stock and water tests are explained, and 3—The mechanical and chemical research laboratories. Here the trainee reviews the new product development and current problems being researched.

During the final week of the program, much time is devoted to personal development and departmental familiarization. The company's accounting; finance; sales, both retail and industrial; purchasing; advertising; public relations and industrial relations functions are thoroughly discussed. All discussions are informal, and the trainees are free to ask questions on any of the subjects.

Finally, at the conclusion of the eight weeks, the trainees are asked for their evaluation of the program, stressing their recommendations for improvement in program content. As a result of suggestions from our last group of engineering trainees, we are planning to add another field problem involving the woodlands operations at one of the pulp mills. Most of the trainees felt this would give them a more complete picture of Scott operations.

Groups of Ten

Our normal group of trainees numbers

about ten, and thus far we have graduated 32 men from the program. Of that number, 29 are presently connected with the company, and three have accepted positions with other companies. None have failed to make the grade in their career assignments.

The initial boost given to these men has allowed a number of them to advance more rapidly into responsible management positions.

While we have not attempted to put a dollar and cents figure on cost savings, since this is not the basic purpose of the program, through close contact with the new engineers' department heads, and review of their performance appraisals, it is our belief that the program outlined has helped the engineer successfully bridge the gap from campus to industry, and enabled him to more readily accept his problem assignments in a more capable, efficient manner.

Recruiting and Training for Corrugated Box Sales Position

Recruiting, selecting, testing and training the college graduate for a corrugated box sales position was the subject of the talk by Glenn Waters of St. Regis Paper Co.

He outlined a four-step program which St. Regis has prepared for recruits. It includes (1) a general introductory program for new employees; (2) basic training program in the manufacture of pulp and paper; (3) a general training program in the manufacture and sale of corrugated boxes; (4) a specialized training program in the sale of corrugated boxes.

The general introductory program provides orientation in company history, organization, plants and products and is divided into eight phases.

The second program covers both the manufacture of kraft paper and the manufacture of printing papers.

The course on the manufacture and sale of corrugated boxes includes a study of receiving and handling of raw materials, machinery and equipment, shipping, production planning, quality control, personnel policies and practices and industrial engineering. Under the subject of sales and marketing the trainee studies estimating, making quotations, writing and processing orders, billing, complaint procedure and customer analysis.

The more specialized program in the sale of corrugated boxes covers six-months course in package engineering and three months in sales service.

During the first phase the trainee works in the sample department. Here he is given the specifications for the package and, in turn, writes up the sample sheet and makes the sample. He is given an object or objects requiring simple packaging and he measures the product, determines the specifications, writes up the sample sheet and finally makes the sample.

He is then given an object or objects requiring more complex packaging (usually requiring interior packaging), and then as before, measures the product, determines the specifications, writes up the sample sheet and makes the sample.

In addition he is expected to read during this period several assigned books on salesmanship.

During the latter part of the training he will begin to make field trips with salesmen.

First the trainee would accompany the salesman in submitting to a customer a package which the trainee has designed for the customer's criticism or comment. Should any change in the package design be necessary, the trainee would make the change and re-submit the package to the customer.

Then the trainee would accompany the salesman to receive instructions from the customer on the packaging of a new product or the re-design of a package for an old product. On his return from this type of field trip, the trainee would work out the package design for the customer and return same to the customer for his comment.

During the three months' sales service training period, the trainee familiarizes himself with the estimating manual and becomes proficient in estimating. He also begins to handle telephone calls with the customer, handle correspondence, deliver and pick up samples. He will also continue assigned reading and field trips with salesmen where he will observe the techniques used by salesmen in handling customer relationships.

In all phases of the program the trainee is subjected to both written and oral reviews of the subject matter covered in the course. He must submit a weekly progress report in the form of an inter-company letter written to the executive responsible for him, with copies sent to the administrator of general training.

Training Paper Machine Crews

H. W. Temple
Abitibi Power & Paper Co.

This paper deals particularly with the training of paper machine crews (newsprint) for a new mill but the same method was also used for the training of operators of other paper mill equipment.

The machine in question was a new, wide, fast machine with pressure headbox and vacuum transfer.

A total of 12 men in the crews had previously been papermakers but had no experience with pressure headbox or vacuum transfer. The balance of the crews were hired locally.

During the construction of the mill a training manual was compiled as far as it was possible to do so working from the drawings. During the final stages of the machine erection the manual was completed as it was then possible to make the necessary corrections, additions and changes due to last-minute engineering changes, location changes of controls, valves, etc.

The manual is made up into these sections: Introduction, Tour Boss, Machine Tender, Back Tender, Third Hand, Fourth Hand, Fifth Hand, Sixth Hand. The introduction contains a short, simple description of the manufacture of pulp and paper as it applies to this mill. Following this are a number of sketches such as: simplified flow sheet of the stock system; stock system at wet end; headbox and fourdrinier section; press section; dryer section; stack, reel and winder. These sketches have the names of the various rolls, etc., so that everybody called the same thing by the same name. The section concerning the Machine Tender consists of the following. An outline of the Machine Tender's responsibilities and instruction sheets on the various parts of his job, such as start-up, shutdown, paper break in the dryers, paper break at the wet end, power failure,

coming on shift, wire change, felt change, etc. Each of these jobs is written up in as few words as possible for each thing he must do and in the correct sequence. These sheets are divided into three columns, titled "What To Do", "How To Do It" and "Notes". Each item is treated as a separate step and thus makes for easier reading and understanding. The sections for the other jobs, as Back Tender, etc., followed the same pattern.

These manuals form the basis of the training. The initial training was done away from the machine, using the manuals and slides of flow sheets, machine sections, control panels, etc., projected onto a screen. Instruments were set up to demonstrate their use in process control and how to set them, change from manual to automatic and automatic to manual. This was followed by guided trips around the machine and its ancillary equipment, tracing pipe lines, locating pumps and valves, location of control panels and the equipment controlled from these panels. Following this, stock lines, valves, pumps, etc., were marked as needed and these markings were later stencilled on by the painter.

The crews were drilled in each step of the operation of their jobs until they could tell us how to do it. This gradually led into wet runs pumping water around the stock, then stock on the wire to the couch-pit, then through the dryers, then onto the reel and the winding of the set. During the wet runs and making of paper, the crews did the operating but we stood by to advise and help them avoid mistakes and help them out of difficulty when it arose.

Each man got a copy of that part of the manual that covered his job, complete with flow sheets, machine section outlines, etc. After a crew member became proficient, this manual served as a guide for him to teach the man below him to do his job so that he in turn could learn the next job ahead.

Safety was written right into the instructions and thus was always an important part of the training.

The group training part, both in the classroom and on the job, had a number of benefits other than just learning their own part of the operation. It gave them a better understanding of the whole process of making paper. They knew more of the other fellow's job and early learned to operate as a team.

The successful start-up of the manufacture of newsprint on a new machine in a new mill in a country where newsprint had never been made before was in some measure attributable to the value of this type of training.

Training in Decision Making

Franc M. Ricciardi
Vice President in Charge of Divisions
American Management Association

The American Management Assn. trains managers in decision making through a course which combines conventional course methods with a simulation exercise. This exercise is a game simulating actual business decision-making at a general management level, and is played in a competitive market situation in which the results of complex decisions are fed back to the players immediately through the use of a computer.

The basic assumptions which underlie our design of the course and the exercise are:

Assumption No. 1 is that training people, in such complex skills as decision making entails, requires not only a transfer of information as is done in lectures, but also the development of skills which can only come through practice and experience.

Assumption No. 2 is that such practice and experience can be useful in application only if the conditions of practice simulate the real conditions, the pressures, and the conditions under which actual executive decisions are made on the job.

Assumption No. 3 is that these conditions can be established in a training situation with sufficient likeness to life that new levels of competence and skill in decision making can be developed by the participant which could only be obtained otherwise through the long and costly method of trial and error.

Details of the Course

Physically the training facilities for the Decision Course are located in a modern brick building which holds lecture rooms, comfortable living quarters for the registrants, and smaller soundproofed rooms called the Decision Rooms in which each team functions when it is engaged in competitive action against other simulated companies. The building also houses an IBM 650 computer which processes the complex data generated by the mock companies which function within the rooms.

Upon beginning the course each executive is assigned to a company and is briefed on the rules of the simulation exercise, and with this information in hand go immediately to their respective decision rooms for a play of the game. The props in these rooms are functional; a conference table for five to eight men which can be divided into parts for sub-group work; a small desk calculator, slide rules, graph paper, and other office supplies. Within this isolated but comfortable board room, each team of company executives makes decisions about their business which are normally made by a team of operating executives each quarter of a year in a real-life company. Each company closeted in its own board room, faced with an identical set of decisions which it must make within the same time period.

The teams may organize their business according to their own desires. They may elect a president, rule as an executive committee, appoint staff spe-

"YOU MEAN YOU DON'T HAVE TO SHUT THE MACHINE DOWN TO OIL IT?"

cialists and subcommittees. Information they have received tells them that there are five companies in the business in which they are engaged, all holding an equal share of the market, and all having equal assets at the beginning of play. The product they make and sell is a consumer product, and they all compete for the same market. This market, they are told, is one, with an occasional recession in which the total market will contract. The effectiveness of the decisions which any company makes will be measured in the competitive market. A series of ill-planned and poor business decisions will mean that the net assets, the profit, and the general economic health of the company will suffer. Furthermore, through the mechanism of the computer, these decisions will be weighed immediately after they are made against the decisions of all others and the results will be stated in financial statements which are issued almost immediately through the ability of the computer to calculate all variables and weigh them against programmed standards and formulae in the computer itself.

There is no winner in the ordinary sense. It is assumed that like real companies the simulated companies are in operation to survive perpetually. Thus not only the short run profit, but the return on investment, growth of assets, and general economic health as reflected in the figures is important.

For purposes of later analysis and discussion, each room is equipped with one-way observation glass, and is wired for audio pick up, as well as tape recording of discussions. The staff for the course spend their time during the play in observation and analysis, which is later discussed with the players.

The play continues for some ten years of simulated business operation, 40 quarters. Then the teams gather for a critique and analysis by staff and players. It's at this stage that the first signs of insight and broadening appear. From the analysis and backward looking comes understanding. This is an important part of the decision making training course.

The experience of the players to date has been almost uniformly one of personal growth and development as managers and decision makers. It's this growth that simulation brings that sometimes is lacking in other less dynamic forms of management training. In the final analysis of training, it's the change of behavior for the better "back on the job" performance that justifies the time and expense of any training program. Simulation in its relatively infant stage as a training method for managers has proven to be such a vehicle for growth.

Getting the specialist in accounting or manufacturing or sales to break his shell and become a generalist is difficult. Yet unless he makes this vital shift he must remain the same size, or perhaps even die.

One of the limitations of conventional training for managers is that it does little to permit a comfortable growth since it does little to protect him during the growth period—the period of the vital shift. Simulation is ideally suited for this growth process. Mistakes made in the game are painful in a minor fashion, but not dangerous. The obstinate manager who persists upon a wrong course for his company and prevails over his fellow players finds that his share of the market and assets decline on the balance sheet he receives. Yet the results are not economically fatal. Chastened but wiser he remedies his errors and comes back again to mend his ways.

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Summing Up Groundwood — Manufacture, Properties and Uses

In this, the thirty-sixth and final article in this comprehensive series, the author takes a broad over-all view of mechanical pulp. He discusses the economics and compares its properties and uses with other types of pulps.

Dr. K. H. Klemm

Manager, München Dachauer Papier Fabriken
Munich, Germany

English text by
G. P. Chinn

A survey of modern equipment and methods used in the production of mechanical pulps has been given. The normal groundwood process has been described in detail because it is of major importance. The "specialties"—brown groundwood, chemical treatment of wood before grinding, etc. — have also been reviewed. To complete the survey, a short description of mechanical processes other than grinding was provided. The following aspects relating to the economic importance, the main properties and the uses of groundwood complete the picture.

Economic Importance of Groundwood

Groundwood preferably is produced in conjunction with the consuming paper mill and only in exceptional cases with the direct aim of selling it as pulp. In Germany, for example, groundwood sold as pulp accounts for only five per cent of the total production. This is generally done by small mills, very often having a daily production below 10 tons. In a few countries where wood is more easily available, this percentage may be higher. The general tendency is, however, to reduce groundwood pulp sales in favor of its manufacture into finished products.

The major economic advantage of groundwood as a raw material is that, by this method of fiberizing, the maximum yield from the wood is obtained. One cord of spruce wood yields only 900—1100 pounds (o.d.) of chemical pulp but up to 2200 pounds of groundwood. Yield from wood fiberized by grinding, therefore, is about twice that from chemical pulping. This factor becomes more and more important as the world fiber consumption is continually

TABLE I—COMPARISON OF MOST IMPORTANT PROPERTIES OF DIFFERENT PULPS

Type of Pulp	Yield on (o.d.) Wood %	Freeness Can. Std.	Tensile m.	No. Folds* (300g Load)	Sheet Density g/cm³.	Brightness G.E.**	Possible Improvement by Beating
Mechanical							
Defibrator (spruce)	85-92	700-800	400-600	less than 10	0.20-0.25	40-45	slight
Normal groundwood (spruce)	92-96	100-125	2400-3000	50-300	0.40-0.48	64-74 60-65	none
Brown (steamed wood) groundwood (pine or spruce)	80-85	140-250	2600-3400	1200-1800	0.45-0.50	15-30	small incr. possible
Chemi-Mechanical							
Weisshuhn (spruce)	85-90	115-140	4000-5000	1500-2000	0.45-0.50	47-58 45-50	small incr. possible
Chemigroundwood (spruce)	82-88	300-430	5500-6500	2000-2500	0.50-0.55	44-53 42-48	small incr. possible
Chemigroundwood (poplar)	80-85	200-430	6000-6500	3000-3500	0.70-0.75	58-66 55-60	small incr. possible
Chemical Pulping							
Semichemical pulp (spruce)	60-75	700-800	3000-4000	greater than 10,000	0.50-0.60	60-75 50-55	Consid. incr. possible
Kraft (pine or spruce)	46-52	700-800	4000-5500	greater than 30,000	0.60-0.65	82-90 25-40	Great incr. possible
Sulphite (spruce)	45-50	680-730	5000-7000	greater than 10,000	0.65-0.75	80-92 55-65	Great incr. possible
Sulphite—with light beating		200-430	8000-10,000	greater than 30,000	0.80-0.85		
Sulphite—with heavy beating		90-140	10,000	greater than 30,000	0.85-0.92		

* German Standard Folding Tester.
** The higher numbers indicate the brightness which can be achieved by economic bleaching.

increasing while the timber available diminishes. In 1937, about 26 million tons of fibrous materials were produced for paper. By 1955, this had risen to about 42 million tons. Groundwood accounted for 9.6 million tons in 1938, increasing to about 12 million tons today. Of the total fibrous material produced for use in paper, groundwood makes up about 34 per cent. An increase in this percentage should be possible.

Review of Groundwood Properties

Because of the relatively low average fiber length and sheet strength properties, groundwood can only be used alone as the raw material for fibrous products in a limited number of special cases. Most of the groundwood containing papers and boards contain other fibrous materials also, primarily chemical pulps. The properties of the different half-stuffs are reviewed in Table I.

Color and Bleaching

All pulps made from wood have a tendency to discolor, this tendency being more marked as the lignin content increases. The susceptibility to discoloration, therefore, decreases in the order: normal groundwood, chemical groundwood, semichemical pulp, chemical pulp and bleached chemical pulp. On bleaching groundwood, there is only a change in the wood coloring substances and practically no removal of lignin (yield loss is only 0.5-1.0%). While the brightness is increased, the tendency to discolor remains the same. With the bleaching of chemical pulps, however, a yield loss, which is primarily related to a decrease in the lignin content, of 5-8 per cent occurs. As a result, the tendency of the pulp to discolor is also decreased.

Structural Elements of Pulps

The technological conditions required for achieving optimum strength in the sheets formed differs with the various fibrous raw materials. The basic concepts of fiber technology, as developed at the University of Darmstadt, show that a certain ratio of fibers to fines is required in the pulp in order for the sheet to have optimum strength properties. This ratio cannot be fixed, but changes according to the structure of the fibers and fines. Slender, soft and flexible fibers require only a low percentage of fines for this optimum to be reached while the percentage of fines must be high if thick, hard and stiff fibers prevail. The properties which most closely indicate the character of the prevailing structural elements in the pulp are the bulk of sheets formed from the fibers alone and the tensile of sheets formed from the fines.

Sheets from Fibers

Low bulk = soft and flexible fibers
High bulk = hard and stiff fibers

Sheets from Fines

High tensile = fibrilplasma type fines
Low tensile = flour-like fines

The normal properties of the structural elements of the various fibrous materials are surveyed in Table II.

The strength properties of sheets made from groundwood cannot approach those made from chemical pulps. This is particularly true regarding the property of chemical pulps to form strong sheets even at high freeness. In groundwood, contrary to chemical pulps, the percentage of fines is of major importance. Groundwood and chemical pulps, therefore, must be considered as two different raw materials. The structure of sheets formed from each of them show distinct differences. In the paper sheet, the round cross-section and hard structure of the groundwood fibers are maintained while those of chemical pulps are plastic, soft and flexible and, especially after pressing, their cross-section takes the appearance of a flattened rubber hose. The great differences in strength properties of sheets formed from the various fibrous materials are closely related to the area of fiber contact. This explains the important influence of the fines on the strength properties of groundwood sheets. In the above, as previously mentioned, the properties of steamed and chemigroundwood fall in the range between normal groundwood and chemical pulps.

TABLE II—PROPERTIES OF STRUCTURAL ELEMENTS OF VARIOUS PULPS

Type of Pulp	Freeness Can. Std.	Fines %	Tensile m.	Number of Folds*	Sheet Density g./cm³.
Normal groundwood (spruce)	100-125	40-46	2400-3000	50-300	0.40-0.45
Fibers	600-800	0	1000-1600	less than 100	0.30-0.35
Fines	25-90	100	1800-3200	less than 10	0.40-0.60
Chemigroundwood (poplar)	200-300		3500-4500	3000-3500	0.65-0.70
Fibers	500-700	0	2500-3000	1500-3000	0.45-0.50
Fines	65-115	100	1600-2200	less than 10	0.40-0.60
Sulphite (spruce)	680-730	8-12	5000-8000	greater than 10,000	0.65-0.70
Fibers	780-850	0	4500-6000	greater than 10,000	0.50-0.70
Fines	25-65	100	2800-3500	100-300	0.60-0.80

* German Standard Folding Tester

Groundwood End Uses

Groundwood is used in widely different percentages in the production

TABLE III—SURVEY OF GROUNDWOOD CONTAINING PAPERS AND BOARDS

Kind of Paper	Chemical Pulp Content %	Filler Content %	Basis Weight lb./3000 ft².
Newsprint (also telephone book and similar papers)	10-20	0-10	27-34
Catalogue, rotogravure and similar papers	15-25	5-15	30-43
Illustrated magazine (offset)	15-25	15-30	37-50
Wallpaper and poster papers	15-30	0-25	43-75
Finer grades (writing and book printing papers)	60-80	10-15	37-50
Tissue	10-20	—	21-37
Folding and container board (when over 100 lb./1000 ft²., usually laminated—filler mostly waste paper)			
a. Liner—groundwood containing	10-20	0-20	
b. Liner—low groundwood content	20-30	0-20	
c. One liner—sulphite only	30-40	0-20	
d. Two liners—sulphite only	40-60	10-25	
Wood board (egg carton)—laminated above 200 lb./1000 ft².	0-30	—	120-300
Heavy board (plates, coasters)	0-30	—	300-600
Wood board—laminated	—	—	over 600

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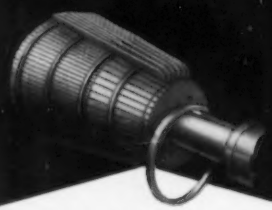

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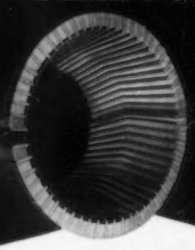

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TABLE IV—BROWN GROUNDWOOD CONTAINING PAPERS AND BOARDS

Type of Paper or Board	Chemical Pulp %	Basis Weight lb./1000 ft².
Brown groundwood papers (bag and wrapping—generally with waste paper addition)	0-35	20-40 (55-120 lb./ream)
Brown groundwood board (container board—often with better grade paper liners)	0-20	30-100
Brown groundwood heavy boards (leatherboard, duplex and triplex)	0-20	100-200
Very heavy boards from brown groundwood (usually built up by lamination)	0	over 200

of various papers. In many of the higher grades, it is used only as a cheap filler forming up to 40 per cent of the furnish. However, because of the tendency of groundwood to discolor, the permanance of groundwood containing papers is low and it must be avoided in those where stability is an essential requirement. The great field for groundwood is in the short-life, mass tonnage papers. The development of modern methods for bleaching groundwood has raised the upper possible quality limit and opened up a much broader field for groundwood utilization. In Table III, the most important groundwood containing papers and boards are surveyed and the average percentage of chemical pulps and fillers in each shown.

Brown groundwood has higher strength properties than normal groundwood. The steaming of wood prior to grinding is favorable to the production of long and flexible fibers similar to sulphite. Its use is, however, restricted by its brown color although, unlike normal groundwood, it can be used to produce strong finished products (e.g. leatherboard) without the addition of other fibrous materials being necessary. In combination with high strength chemical pulps (kraft) or with waste paper stock, it is used to produce wrapping papers and other paper and board products where the brown color is not detrimental.

The aim of softwood groundwood produced with the aid of chemicals is an improvement of the quality sufficient to permit a reduction in the percentage of chemical pulp used in groundwood containing papers while still maintaining their quality. It, therefore, can be used in the furnish of all papers tabulated in Table III. Chemigroundwood, however, has properties which are related to steamed groundwood and semi-chemical pulps. As its production is still in the development stage, its full potentialities are not yet known. To date, Chemigroundwood from hardwoods is used only in newsprint production.

The full potential of disk refiner mechanical pulping is also, as yet, unknown. At its present state of development, it is doubtful whether it will be able to replace normal softwood groundwood either from economic or quality considerations. Its most probable use is for the coarser paper products such as wrapping papers, roofing felts and container boards. However pulp produced by disk refiners from hardwoods chips given a mild chemical pretreatment, appears to have a much wider potential.

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Preparation of the text of Dr. Klemm's thirty-six articles on groundwood manufacture for publication in book form has already begun. The editors hope to have this, the most comprehensive volume ever published on groundwood, available for sale early this fall.

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NEWS OF SUPPLIERS

Pulpmen's Golf . . .

Newly elected president of the New York Pulpmen's Golf Association, T. J. Salb (center) and trophy winners Art Potter (left) and Walter Lawrence (right) at the association's golf outing held June 3 and 4 in Tarrytown, N. Y.

Manchester Machine Co., Middletown, Ohio, manufacturer of papermill machinery, has let contracts for the construction of a new plant which will cost about $1,500,000. The plant will be located on a 137-acre tract one mile north of Monroe, Ohio. Construction begins in the immediate future and should be completed early next year. Manchester's new headquarters will have nearly 100,000 square feet of floor space and more than double the productive capacity of its present operation. Office and manufacturing buildings will be separate.

John W. Bolton & Sons, Inc. and Emerson Manufacturing Co. Division, Lawrence, Mass., have appointed Grubbens & Co., Aktiebolag, Stockholm, Sweden as its sole distributors in Sweden.

Graver Water Conditioning Co. has formed a new Chemical Process Department to handle its expanding program of liquid treatment applications. Noel S. Chamberlin, chemical engineer, has been appointed manager.

The new department will be responsible for the application of unit process operations to the processing, purification, separation or recovery of products used and produced by a variety of industries. These unit operations include ion exchange, sedimentation, filtration and flotation.

Huyck Felt Company's Aliceville, Ala. Plant . . .

. . . recently conducted its second felt workshop, playing host to 20 papermakers. Graduates seated in front row are: Dr. Karl Lauer, University of Alabama; J. B. Cunningham and Carl McLeod, Gulf States; R. S. Engert, St. Regis; Luther I. Peterson, Eaton-Dikeman; Larry Thomas, Crossett; Miles Penton, Gulf States; Maurice Larson, Bergstrom; John Noble, Waldorf; F. M. Broome, St. Regis; and Jack Gillen, Fleming and Sons.

Second row; Earl Moak, Marathon Southern; Clyde J. Pate and J. S. Witt, Champion Paper; Lucien R. Vianey, Eaton-Dikeman; J. W. Malone, Scott Paper; S. D. Dollar, Gulf States; Ralph H. Beaumont, Huyck Felt; Frank Parham, Gulf States; and Edwin P. Madsen, Huyck.

Back row; Earl D. Rhodes, Gerald N. Fitzgerald, Roderick T. Clarke, Jay Knowles, John P. LaRue, Charles W. LaDow, Frederic A. Soderberg, Irving H. Peters and John D. Stoer, Huyck Felt; Robert Hart, Gulf States; P. F. Neumann, Hercules Powder; and Arthur S. Hayeslip, Huyck.

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Casein, acid prec.:			
dom. sh. pt. c.l. (30 mesh)	cwt.	56.00	/ —
Arg. ex dock	cwt.	18.75	/19.25
New Zealand	cwt.	23.50	/24.00
Caustic soda:			
c.l. wks. solid, 76%	cwt.	4.80	/ —
flak. & grd. drums, c.l.	cwt.	5.20	/ —
liquid 50% tanks		2.90	/ —
liquid 73% tanks		3.00	/ —
China Clay			
dom., dry-grd., airfloat:			
325 mesh bgs., c.l. Geo.	ton	10.00	/12.00
300 mesh, bgs., c.l. Geo.	ton	13.50	/14.50
imp., white, lump, c.l. ex. dock		20.00	/35.00
Chlorine:			
single-unit tanks, works	cwt.	3.15	/ —
multiple unit, 2-5 cars per yr.		5.75	/ 4.05
Lime:			
hydrated, bulk, c.l. N.Y.	ton	23.55	/ —
quicklime, bulk, c.l. N.Y.	ton	20.55	/ —
Gum rosin:			
K, M, N, drums, c.l. Savan,	cwt.	7.75	/ 7.85
Rosin size:			
70%, gum & pale paste, tank cars, south, sh. pt.	cwt.	7.51	/ —
Saltcake:			
dom. bulk, 100% anh. wks.	ton	28.00	/ —
Soda ash:			
light, 58% ash bags, wks.	cwt.	1.85	/ —
bulk, c.l. wks.	cwt.	1.55	/ —
Sodium chlorate:			
drums, c.l., wks.	cwt.	9.00	/ —
drums, l.c.l., wks.	cwt.	9.50	/10.50
Sodium peroxide:			
dms., c.l. E. of Miss.	lb.	.20½	/ —
l.c.l. (same basis)		.21	/ .21½
Sodium silicate, 40° Be.:			
tank-cars, wks.	cwt.	1.20	/ —
drums, c.l. wks.	cwt.	1.55	/ —
47° Be. WW.			
tank-cars, c.l. wks.	cwt.	1.90	/ —
drums, c.l. wks.	cwt.	2.25	/ —
Soybean, protein:			
chem. isol., wks. c.l. bags	lb.	.19	/ .23
Starches:			
Corn, multiwalls, c.l. prod. plant:			
pearl	cwt.	6.49	/ 6.75
white, dextrins	cwt.	8.08	/ 8.20
chlorinated	cwt.	8.25	/ 8.35
potato, Idaho, c.l. wks.	cwt.	6.35	/ —
East, fr. all. 50 cents cwt.			
potato, Maine, f.o.b. wks.	cwt.	6.25	/ —
Sulphuric acid:			
60° Be. cbys. c.l. wks.	cwt.	2.00	/ —
l.c.l. wks.	cwt.	2.30	/ —
tank-cars, wks.	ton	18.60	/ —
Sulphur:			
crude, c.l. mines, contract, long	ton	23.50	/ —
f.o.b. vessels Gulf dock	ton	25.00	/ —
Sulphur dioxide:			
liquid, coml. cyl., wks.	lb.	.10	/ .12
multi-unit cars, wks.	lb.	.0535	/ —
Talc, fibrous grd., bags:			
c.l. wks., N.Y.	ton	28.00	/ —
l.c.l. wks., N.Y.	ton	31.00	/36.00
Titanium dioxide:			
anstase, c.l. dlvd. E. bags	lb.	.25½	/ —
l.c.l. dlvd.	lb.	.26½	/ —
rutile, c.l. dlvd.	lb.	.27½	/ —
l.c.l. dlvd.	lb.	.28½	/ —

OBITUARIES

Eugene Warren, 84, former treasurer of the John A. Manning Paper Co., New York City, died June 4 after a long illness.

Herbert Boyden Newton, 84, president of the Newton Paper Co. for more than 20 years, died June 10 at his home in Holyoke, Mass., after a long confinement.

He joined Newton Paper Co., of which his father was one of the founders, and became president on the death of his brother-in-law, Henry L. Russell, over 20 years ago.

John J. Hoberg, 86, retired paper mill operator, died May 31 at a Green Bay, Wis. hospital. With his father and brothers he founded the Hoberg Paper mill, now the Charmin Paper Products Co. He retired in 1943.

Dan L. Pickering, 70, died June 7 at home in Lancaster, Ohio. Chairman of the board, St. Regis Container Corp., Cleveland, Ohio, he was one of the organizers and founders of General Container Corp. in 1927. He has been associated with the paper container industry since 1914.

Alvin H. Johnson & Co.

INCORPORATED

Consulting and Designing Paper Mill Engineers

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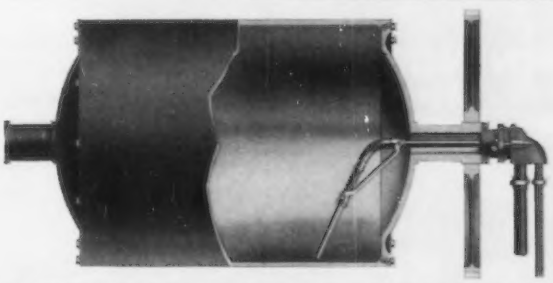
PAPER MILL DESIGN PROCESS ENGINEERING POWER PLANTS

STRUCTURAL AND ARCHITECTURAL DESIGN

REPORTS APPRAISALS ESTIMATES AND SURVEYS



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The Midwest Auto-flex Syphon features a spring and brace that holds the end of the pipe at the proper distance from the bottom of the dryer. The pipe cannot possibly take any other position —hence, proper water and air removal.

The cantilever leverage exerted is less than half that exerted by bent pipe syphons. In the Midwest, the pipe clears the dryer and creates no drag on the journal. Fits all steam joints and remains effective at low as well as at high operating speeds.

Order a few for trial and quit worrying about syphon troubles.

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THIRD QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 90.00	$82.50/ 90.00	§$90.00/ —	§$90.00/ —	§$90.00/ —
Bleached Gw'd.	$97.50/100.00	$97.50/100.00			
Kraft, Blchd.	157.00/ —	160.00/162.50	$157.00/162.50*		$157.50/ —
Kraft, Blchd. Hdwd.	152.00/ —		$137.00/ —		
Kraft, Semi-bleached	140.00/ —	140.00/ —			
Kraft, Unbl.	117.50/125.00	125.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	155.00/ —	155.00/ —	*155.00/ —	*155.00/ —	155.00/ —
Sulphite Bl. Hdwd.	150.00/ —				
Sulphite, Unblchd.	135.00/ —	135.00/ —	†135.00/ —	*130.00/ —	
Sulphite, Unb'l. Gl'sn		134.00/ —	†134.00/ —		
Soda, Blchd.	147.00/150.00	150.00/ —			

§ On Dock Atlantic Ports. * Freight allowed. † Varying Freight Allowances

NEW YORK RAG MARKET

PRICES NOMINAL

New Domestic Cotton Cuttings
Delivered Mill Basis

	Per 100 lbs.
No. 1 White Shirts	$13.50/$14.50
No. 1 Unblchd. Muslins	16.00/ 17.00
Blchd. & Unblchd. Underwears	15.00/ 16.00
No. 1 Light Cream Silesias	12.00/ 13.00
No. 1 Light Blue Overalls	7.00/ 8.00
Percales	6.00/ 6.50
No. 1 Light Prints	5.00/ 5.50
Suntan Khakis	5.75/ 6.75
Cottonades	3.00/ 3.50
No. 1 Washables	2.50/ 3.25

Old Domestic Cotton Rags
Delivered Mill Basis

	Per 100 lbs.
Mixed White	$3.25/$3.75
Cotton Pants & Overalls	2.25/ 2.75
Twos and Blues, Repacked	2.00/ 2.50
No. 2 Roofing	.60/ .75

COTTON LINTERS

Memphis Market
f.o.b. Oilmills

Week Ended June 13		Per 100 lbs.
Grade 1	n. a.	
2		
3		$9.50/ $8.00
4		7.50/ 7.00
5	1 cut—felting	6.50/ 6.00
6		5.50/ 5.00
7		5.00/ 4.50

*Based on 73% cellulose.

OLD ROPE & BAGGING

(Prices to Dealers, f.o.b. N.Y.)

	Per 100 lbs.
New Burlap Cuts	$4.50/$5.50
Scrap Burlap	3.50/ 4.25
Australian Wool Pouches	5.00/ 5.50
Gunny	4.50/ 5.00
No. 1 Domestic Manila Rope	6.25/ 7.50
No. 1 Foreign Manila Rope	5.25/ 6.25
Domestic Sisal Strings	4.00/ 4.50

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	June 16	June 16	June 16	June 16
No. 1 Mixed Paper	$5.00/ $7.00	5.00/ 7.00	4.00/ —	12.00/ —
No. 1 News	11.00/ 12.00	12.00/ —	14.00/ —	14.00/ —
Overissue News (Lg. size)	11.00/ 14.00	11.00/ 13.00	19.00/ —	18.00/ —
Mill Wrappers	10.00/ 13.00	10.00/ 12.00	7.00/ —	13.00/ —
Old Corrugated Containers	21.00/ 22.00	20.50/ 21.00	19.00/ —	20.00/ —
Super Resorted Kraft Paper	30.00/ 35.00	35.00/ 45.00	35.00/ —	45.00/ —
New Double Kr. Ld. Corr. Cuts	25.00/ 30.00	30.00/ 35.00	35.00/ —	30.00/ —
(Semi-chem. medium)	40.00/ 45.00	37.50/ 45.00	40.00/ 45.00	30.00/ 35.00
New 100% Kraft Corr. Cuts	50.00/ 55.00	50.00/ 55.00	50.00/ —	45.00/ —
New Br. Kraft, Env. Cuts	65.00/ 70.00	70.00/ 75.00	50.00/ —	50.00/ 55.00
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 60.00	50.00/ —	55.00/ 60.00
New Br. Kr. Bag Waste Unprintd	60.00/ 65.00	65.00/ 75.00	60.00/ —	55.00/ 60.00
No. 1 Groundwood Shvs.	21.00/ 25.00	20.00/ 25.00	14.00/ —	30.00/ 35.00
White Newsblanks	42.50/ 50.00	45.00/ 50.00	35.00/ —	55.00/ —
No. 1 Soft White Shvs.	55.00/ 60.00	60.00/ 65.00	55.00/ —	— / —
Super Soft White Shvs.	65.00/ 75.00	75.00/ 85.00	65.00/ —	— / —
Hd. White Shvs.	85.00/ 95.00	95.00/105.00	85.00/ —	85.00/ 90.00
Hd. White Env. Cuts	105.00/110.00	110.00/115.00	90.00/ —	100.00/110.00
Col. Tab. Cards	50.00/ 55.00	55.00/ 60.00	47.50/ —	32.50/ —
Manila Tab. Cards	65.00/ 70.00	70.00/ 75.00	65.00/ —	70.00/ —
No. 1 Col. Ledger	28.00/ 30.00	30.00/ 35.00	40.00/ —	22.00/ —
White Ledger	42.50/ 50.00	45.00/ 50.00	52.50/ —	45.00/ —
Mixed Book & Mag.†	15.00/ 18.00	17.00/ 19.00	12.00/ —	— / —
No. 1 Books‡	19.00/ 23.00	20.00/ 22.00	27.50/ —	— / —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

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in REPLACEMENT TACKLE for all makes, sizes & types of Stock Treating Equipment

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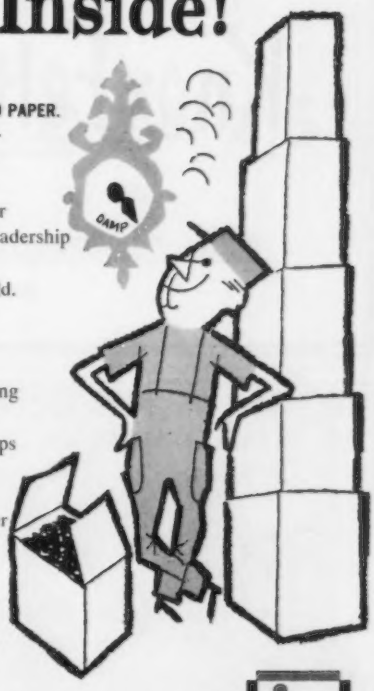

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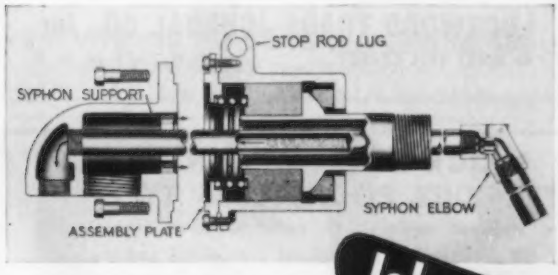

Type SDP shown. Hinged syphon elbow replaces unwieldy curved syphon pipes with two straight pipes. Newest Johnson development is the Quick Release nipple. Write for Bulletin S-3001.

Johnson Rotary Pressure Joints

First in the Paper Industry

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CAMDEN, MAINE

America's First Manufacturer of Endless Paper Machine Felts

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TEMP.—500°
LOWEST PRICES

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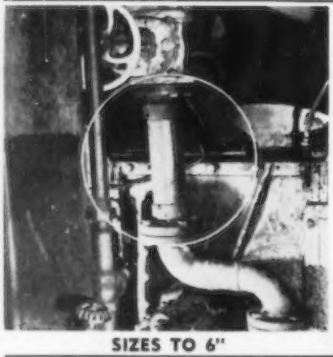

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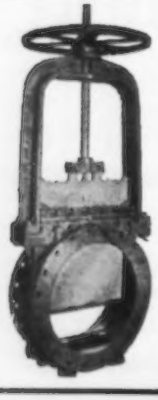

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METALS — I.B.B.M. oil iron, bronze or stainless steels, body parts plain or rubber lined.

The photo of 24" Fig. 241 I. B. B. M. valve while illustrating the gate bottom wedge system for forced gate seating and "GUILLOTINE" edge for shearing fibre at seat also shows the packing box and yoke as separate units. Both adjustable.

- **The "FAST THREADED" screw stem and ball bearing speeds valve operation.**
- **The packing box is extra deep, is adjustable and provided with specialized lubricated packings and special type gland and compression bolts.**
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- **Replaceable gate edge shoes are used in valves 10" and larger. These shoes are of special value when valves are installed stem and pipe horizontal.**

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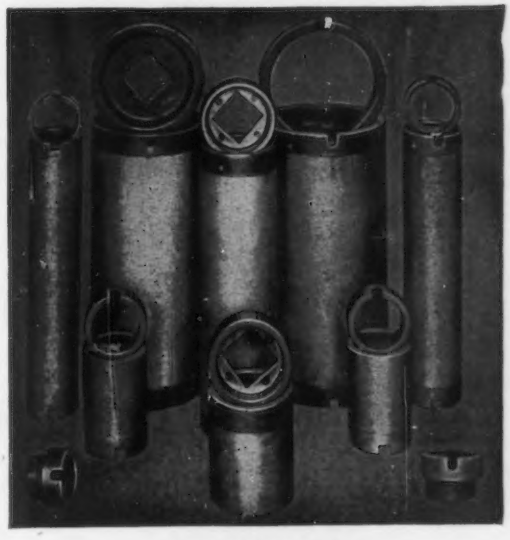

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Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

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J-23

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Finding and landing **THE ONE BEST JOB** requires sound analysis, careful planning, proper contacts and skillful negotiation. Paper men ourselves, and the only specialists in the world in our particular field, we assist responsible paper men to accelerate their careers by uncovering and developing **THE SPECIFIC SITUATION** that most exactly fits the needs of each individual we serve. If you seek to better yourself, and your performance to date entitles you to our endorsement, we can and will help you. Contact us in absolute confidence for information regarding procedure.

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J-23

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Two-machine kraft paper mill specializing brown and colored bag paper.

Excellent position for experienced papermaker. Must be capable of taking full charge of manufacturing, technical control and maintenance.

Salary commensurate with experience. Pension, insurance and other benefits. Rent-free residence on mill grounds available.

Send complete resume or phone Mr. E. I. Hardy, Orange Pulp & Paper Mill, Orange, Texas. Tuxedo 3-4305.

J-23

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through the columns of the CLEARING HOUSE

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BEATERS
2—1500 lb. rag beaters, Valley Iron, bandless rolls, 54" x 48", cast iron tubs.

CALENDER STACKS
1—3 roll 30" face friction Calender Stack (Holyoke), 2 iron rolls, 1 cotton roll and 1 spare cotton roll.
1—3 roll 84" calender stack.
1—4 roll 72" Calender Stack. (Extra heavy duty)
1—5 roll 82" face.
1—5 roll 86".
1—7 roll, 84" face.

CHIPPERS
1—96" Murray 4 knife Chipper—anti-friction bearings.
1—84" 10 knife Carthage Chipper. Anti-friction bearings.
24—Chipper Knives 15⅞ x 8¼, 2 slot.

CLASSIFINER
1—Dilts Classifiner, practically new.

COUCH ROLLS
4—Practically new, rubber couch rolls, 18" diameter x 78" face.

CREPING DRYER
1—48" diameter x 120" face, with frames, bearings, doctor blade and drive.

CRUSHER & HAMMERMILL
1—Murray Chip Crusher.
1—Jeffrey Hammermill (18" dia. rotor).

CYLINDER MOLDS
8—36" diameter x 94" face, hollow shafts. Very good condition.
1—30" diameter x 72" face.
1—30" diameter x 92" face.
1—36" diameter x 84" face.
2—36" dia. x 54" base
2—36" diameter x 110" face.
3—36" diameter x 90" face, 18" diameter couch rolls.
1—60" dia. x 170" face.

DIGESTERS
1—Biggs 12' 6" (Globe).

DISINTEGRATOR
1—Shartle 8" disintegrator (new) with 125 horsepower induction motor. (Totally enclosed).

DRIVES
1—Rice-Barton hypoid enclosed drive, 4 to 1 ratio.
1—#6 Reeves vertical—anti friction bearings, totally enclosed.
1—Sandy Hill right angle 50 H.P. (4.75 to 1)
1—Jones 21 H.P., ratio 10 to 1 (enclosed angle drive).
1—#4 Reeves Drive.
2—Waterbury Hydraulic Variable speed line shaft drives (from 40 to 100 H.P.).
3—Rice Barton enclosed drives, double reduction (14 to 1 one end, 4 to 1 other end).
1—Beloit hypoid enclosed drive 60 h.p. 5 to 1 ratio.

DRYERS
1—28" diameter x 84" face.
2—30" diameter x 40" face, with bearings.
2—30" diameter x 48" face, with bearings.
60—36" diameter x 84" face, complete with frames, gears & bearings.
4—48" dia. x 52" face with frames, gears, bearings.
1—36" diameter x 44" face.
3—36" diameter x 76" face.
6—36" diameter x 80" face.
22—28" diameter x 40" face with frames, gears and felt rolls.
1—16" diameter x 54" face (steel.)
6—48" diameter x 130" face.
2—Cooling Drums, bronze, 36" x 128", with frames, gears and necessary rolls to make up the unit. (After dryers)

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"Rice Barton," details on request.

EMBOSSING CALENDERS
1—43" 3-Roll Embossing Calender.
1—45" Meadows 2 roll embosser.
3—62" 2 roll embossers.

EXTRACTOR ROLL
1—Extractor roll, 26" diameter x 104" face.
1—Rice Barton & Fales, Extractor Roll, 26" diameter x 104" face.

FELT CONDITIONERS
1—Scofield, 125" face.
1—Scofield, 154" face.

FELT ROLLS
50—Brass Felt Rolls, with Brass Journals, 72" face x 5" dia.

FLAT SCREENS
1—8 Plate "Packer".
1—12 Plate "Packer".
1—16 plate "Packer" late type roller shoes.

HYDRAFINER
1—Dilts, stainless steel filling, anti-friction bearings, excellent condition.

JORDANS
1—Noble & Wood Mammoth.
1—Noble & Wood Monarch, Type D.

LABORATORY EQUIPMENT
2—12" x 12" Vibrating Screens, stainless steel.
1—basis weight scale
1—16" diameter x 24" face Laboratory High Pressure Dryer
1—Press Rolls 6" diameter 24" face, steam jacketted
1—8" x 8" Sheet Mold, new.
1—¾" Extruding Head.
1—2" Shartle Hydrapulper.
2—8" x 8" Sheet dryers.
1—12" x 12" sheet dryer.
1—6" diameter Hydraulic Press.
1—25 lb. Valley Laboratory Beater, with washer.
1—Vissolver.
1—Glarometer.
1—15 lb. Dilts Hollow Mid Feather Laboratory Beater, antifriction bearings. Complete with washer.
1—Alsop Filter Press.
1—Scott Tensile Tester.

LAMINATING MACHINES
2—84" Asphalt laminators.

MISCELLANEOUS
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1—Morpac Packaging Machine (Details on request).

PRESS ROLLS
2—Chilled iron, chrome plated 9" x 72".
1—Chilled iron, chrome plated 12" x 100".
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4—Dyno-Pulpers.

PUMPS
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1—123"—3 bowl Revolving Reel.
1—134"—2 drum.
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1—#2 Claflin refiner.

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1—#5 Bird Saveall.
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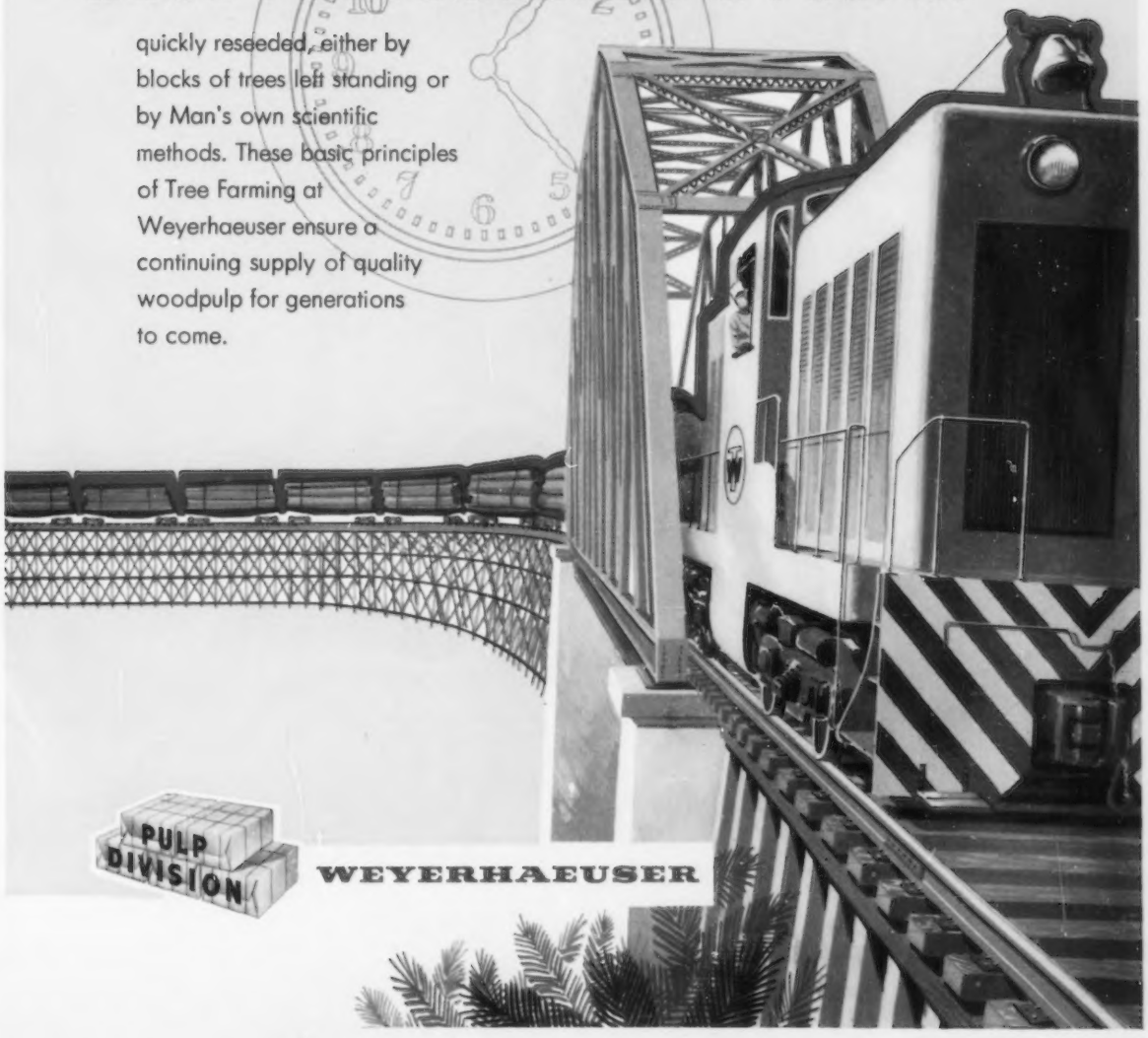

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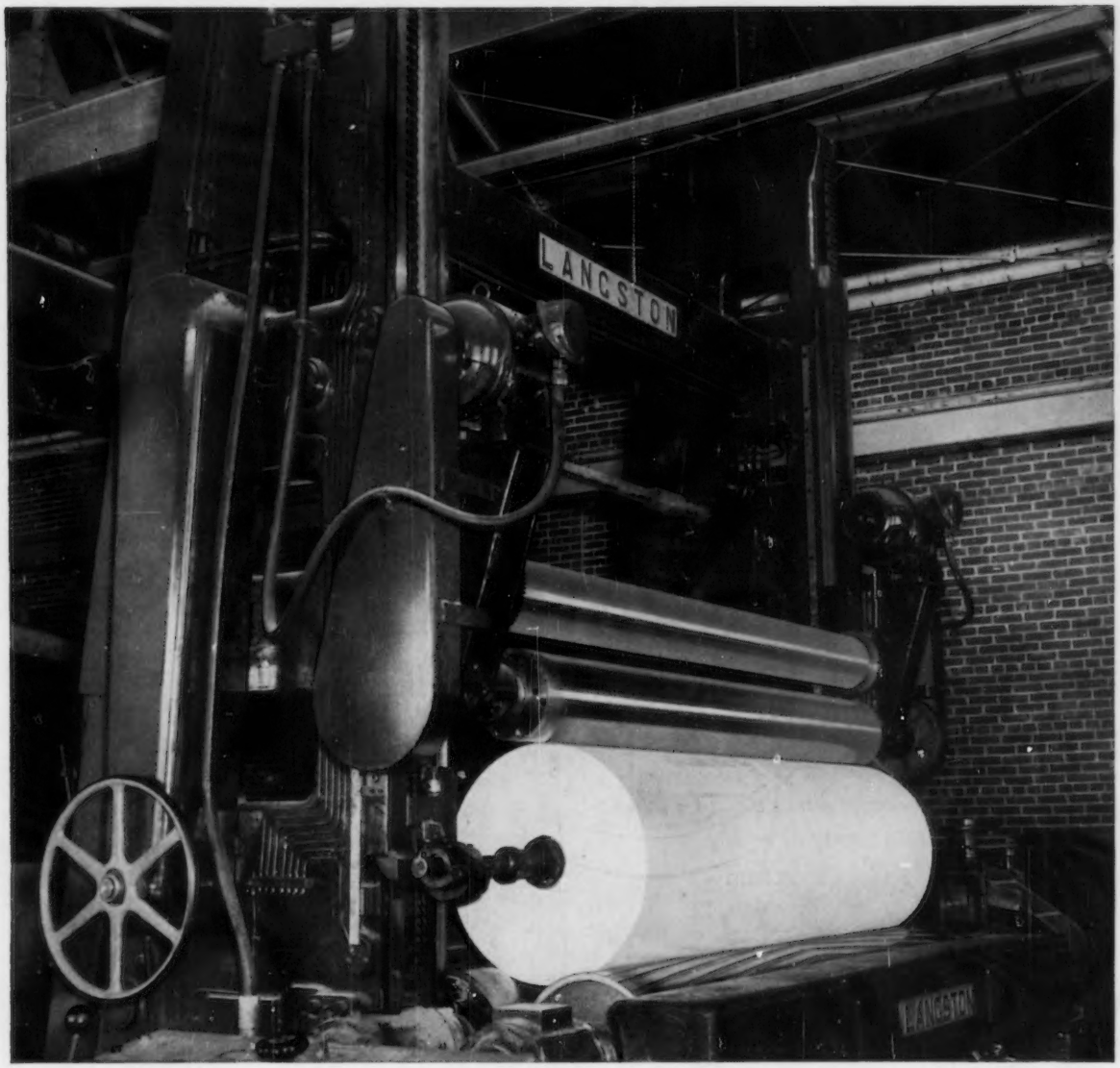

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